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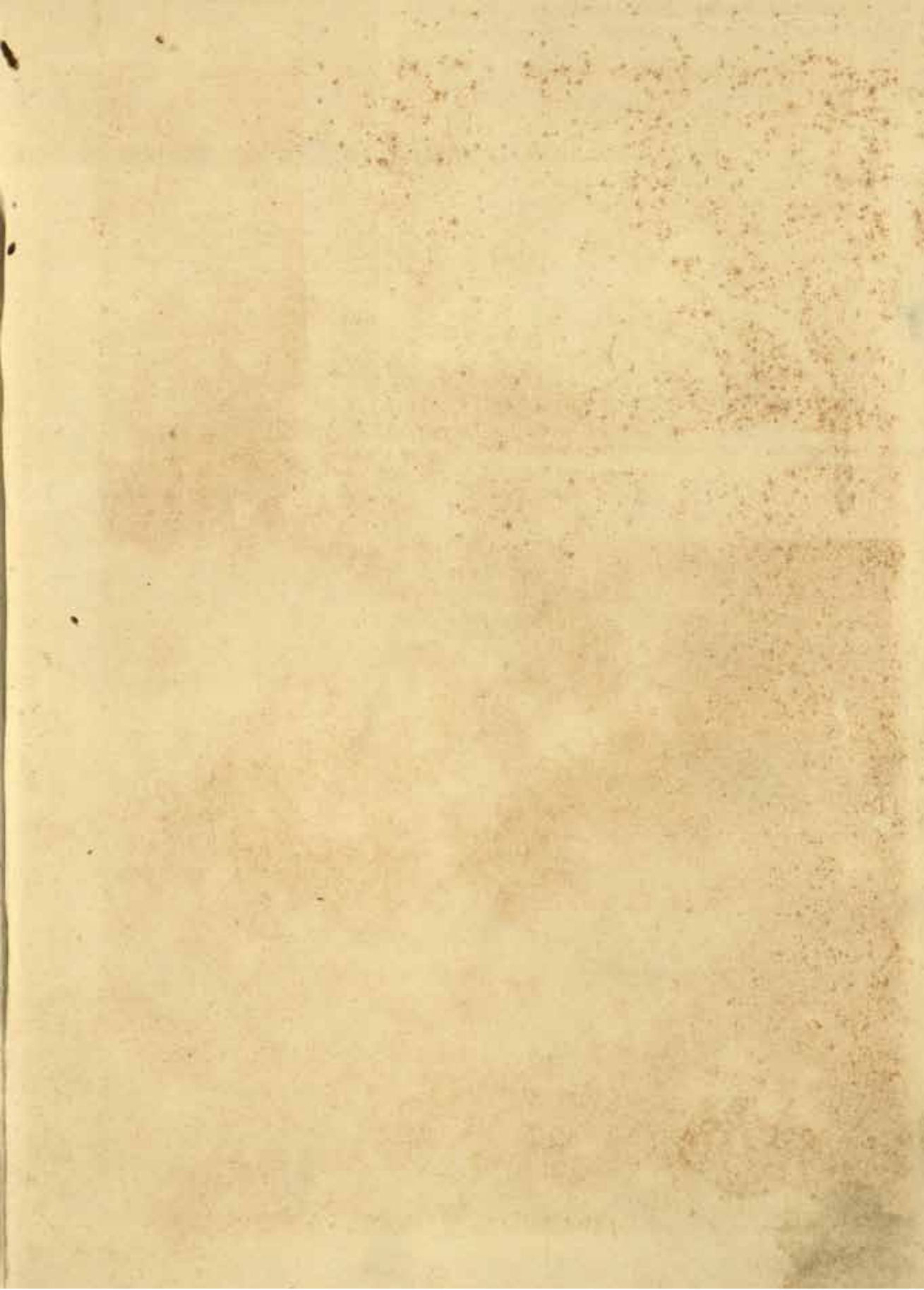
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SPECIAL NOTE

At the present time economy is a major consideration. In place, however, of the proposed paper covers, a modified form of binding has been adopted, which it is hoped will prove satisfactory to members. The List of Fellows printed in Volume LXXX covered the period to October 1948. An adjusted list for 1948-50 will be issued with Volume LXXXIII which is now being prepared.

PROCEEDINGS

OF THE

Society of Antiquaries of Scotland

SESSION

MCMXLVII.-MCMXLVIII.



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TABLE OF CONTENTS

	PAGE
The Chamber Tomb of Unival, North Uist. By Sir LINDSAY SCOTT, F.S.A., F.S.A.Scot., . . .	1
What was a Davach? By ANDREW McKERRAL, C.I.E., M.A., B.Sc., F.S.A.Scot., . . .	49
Some Antiquities in the Parish of Craignish. By A. GRAHAM, F.S.A., F.S.A.Scot., . . .	52
Old Cromarty Castle. By W. M. MACKENZIE, M.A., D.Litt., LL.D., H.R.S.A., F.S.A.Scot., . .	60
The Excavations at Cairnpapple Hill, West Lothian, 1947-48. By Professor STUART PIGGOTT, B.Litt., F.S.A., F.S.A.Scot.,	68
Report on the Excavation of a Broch at Skitten, in the Kilmster District of Caithness. By CHARLES S. T. CALDER, A.R.I.A.S., F.S.A.Scot.,	124
With a Report on the Animal Remains. By MARGERY I. PLATT, M.Sc., Royal Scottish Museum, Edinburgh,	143
The Church Bells of Renfrewshire and Dunbartonshire. By R. W. M. CLOUSTON, B.Sc.(Eng.), F.S.A.Scot.,	146
The Excavations at Hownam Rings, Roxburghshire, 1948. By Mrs C. M. PIGGOTT, F.S.A., F.S.A.Scot.,	193
Two Textiles from the National Museum of Antiquities, Edinburgh. By Mrs GRACE M. CROWFOOT,	225
The Roman Road to Raeburnfoot. By A. GRAHAM, M.A., F.S.A., F.S.A.Scot.,	231
Neolithic Pottery from Knappers Farm, near Glasgow. By REAY R. MACKAY, F.S.A.Scot., .	234
Charles I's Coronation Ampulla. By ROBERT B. K. STEVENSON, M.A., F.S.A.Scot., . . .	237
"Fort" at Scotatarvit Covert, Fife. By GERHARD BERSU, Hon.F.S.A., Hon.F.S.A.Scot., . .	241
Rectangular Enclosure on Green Craig, Fife. By GERHARD BERSU, Hon.F.S.A., Hon.F.S.A.Scot.	264
The "Wag" of Forse, Caithness: Excavations 1947-48. By ALEXANDER O. CURLE, C.V.O., LL.D., F.S.A., F.S.A.Scot.,	275
 Notes:—	
1. The Acre Extent of the Merkland. By A. McKERRAL,	286
2. Two Choir Stalls and part of Wooden Panel, Lincluden Church. By STUART MAXWELL, Assistant Keeper of the Museum,	288
3. Two Early Eighteenth Century Neckslides. By ROBERT B. K. STEVENSON, M.A., Keeper of the Museum,	289
4. Carved Oak Panels from Greenlaw, Kirkcudbrightshire. By STUART MAXWELL, Assistant Keeper of the Museum,	290
5. Notes on Some Prehistoric Objects. By ROBERT B. K. STEVENSON, M.A., Keeper of the Museum,	292
6. Beaker from Fettercairn. By ROBERT B. K. STEVENSON, M.A., Keeper of the Museum, .	295
7. Short Cist at Knockhill, Kirkden, Angus. By ROBERT B. K. STEVENSON, M.A., Keeper of the Museum,	295
8. Axe from Loch Kinord. By GEORGE S. BEATON, Librarian, Inverurie	297
9. A Small Brass in Kirkcudbright Museum. By FRANK A. GREENHILL, M.A.	297

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 C. Calder
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 From Librarian's

TABLE OF CONTENTS

	PAGE
10. Long Cist at Leuchars, Fife. By JOHN E. HOOPER, Innerleithen,	298
11. Part of Cross-slab from Leuchars, Fife. By the late Rev. NORMAN JOHNSON, Eday, Orkney,	299
12. Bronze Age Burial Cist at Balbie Farm, Burntisland. By Professor STUART PIGGOTT,	299
13. Cinerary Urn from Milngavie, Dunbartonshire. By J. G. SCOTT,	302
14. Unrecorded Stones near Aberfeldy, Perthshire. By N. D. MACKAY,	304
15. Late Bronze Age Burial from Orrock, near Burntisland. By Mrs C. M. PIGGOTT,	306
Anniversary Meeting and Annual Report, 1947-48,	309
Meetings of the Society,	314
Donations to and Purchases for the Museum, 1947-48,	315
Donations to and Purchases for the Library, 1947-48,	322
Index,	326

LIST OF ILLUSTRATIONS

	PAGE		PAGE
Chamber Tomb of Unival: façade elevation, and sections of chamber,	4	Old Cromarty Castle: plan of various storeys, 1747. Pl. XV, 1.	
— Iron Age pottery,	6	— north and south elevations and sections, 1747. Pl. XV, 2.	
— plan of chamber, and section of cist,	8	Cairnpapple Hill, West Lothian: location maps of site,	71
— pottery find plan,	16	— site before excavation,	73
— reconstruction of funerary pottery,	20, 21	— general plan of excavations,	
— general view of tomb. Pl. I,	<i>facing page</i> 24	— typical holes of Period I,	76
— Iron Age house, looking north. Pl. II, 1.		— plan of excavation of Cairn, area "A,"	79
— portal of tomb. Pl. II, 2.		— sections of henge bank and ditch,	<i>facing page</i> 82
— vertical photograph of cist. Pl. III, 1.		— typical stone-holes of henge,	82
— southern end of façade. Pl. III, 2.		— stone-holes, etc., in area "B,"	85
— pots nos. 9, 8, 1, 5. Pl. IV, 1-4.		— north grave (burial deposit and long section),	87
— pots nos. 3, 12. Pl. V, 1-2.		— sections of Cairn,	<i>facing page</i> 91
— pots nos. 7, 2. Pl. VI, 1-2.		— cist "A" (plan and elevations)	92
— pot no. 51, with sketch of pattern. Pl. VII.		— burials in Cairn enlargement,	96
— pots nos. 4, 6. Pl. VIII, 1-2.		— pins from Period I cremations,	99
— pots nos. 11, 53, 10. Pl. IX, 1-3.		— sherds of neolithic pottery,	101
— pendant. Pl. IX, 4.		— stone axe fragments and flint scraper,	102
— general plan,	<i>facing page</i> 48	— beakers and food-vessel (Periods II and III),	103
Farmstead and Chamber Tomb, Clettraval, North Uist: general plan,	48	— carbonised object and maul,	105
Antiquities in Craignish parish, Argyll: map of sites,	53	— cinerary urns (Period IV),	107, 109
— Dùn Mhuilig, plan and section,	54	— pins from cinerary urns (Period IV),	110
— plan of fort below Mullach Dubh,	56	— general view of excavated area. Pl. XVI.	
— Dùn Mhuilig: mural passage. Pl. X, 1, <i>facing page</i> 58		— excavations in progress. Pl. XVII.	
— — north-east corner. Pl. X, 2.		— stone-hole 8 and beaker grave. Pl. XVIII, 1.	
— — inner face of wall. Pl. X, 3.		— beaker fragments <i>in situ</i> . Pl. XVIII, 2.	
— fort below Mullach Dubh: general view from S.W. Pl. XI, 1.		— stone-holes 20, 21 (Period II). Pl. XIX, 1.	
— — masonry on S.W. face. Pl. XI, 2.		— area within kerb of Period III cairn. Pl. XIX, 2.	
— cist near Gemmil Farm. Pl. XI, 3-4.		— cairn (Period III) during excavation. Pl. XX, 1.	
Old Cromarty Castle: north and south elevations, 1746. Pl. XII.		— cairn completely excavated. Pl. XX, 2.	
— plan of first and second storeys, 1746. Pl. XIII, 1.		— north grave (Period II). Pl. XXI.	
— plan of third, fourth and fifth storeys, 1746. Pl. XIII, 2.		— kerb of Period III cairn on south. Pl. XXII, 1.	
— plan of ground storey and court, 1746. Pl. XIV, 1.			
— plan of ground storey and court, 1747. Pl. XIV, 2.			

	PAGE		PAGE
Cairnapple Hill, West Lothian: collapsed kerb of cairn on south-east. Pl. XXII, 2.		Church Bells of Renfrewshire and Dun- bartonshire: inscriptions on bells at Roseneath and Bonhill,	179
— cist A (Period III), with food-vessel <i>in situ</i> . Pl. XXIII, 1, 2.		— city arms, Glasgow, from bell at Kirkin- tilloch,	188
— cist B (Period III) before and after re- moval of capstone. Pl. XXIV, 1, 2.		Excavations at Hownam Rings, Roxburgh- shire: location map,	194
— cinerary urns 1, 2 (Period IV) <i>in situ</i> . Pl. XXV, 1, 2.		— plan showing excavated areas,	197
— base of beaker from north grave. Pl. XXVI, 1.		— plan of area II,	199
— cup-marked stones from cist A and Period III cairn. Pl. XXVI, 2.		— Area II, cutting D, and palisades. Pl. XXXVIII, 1, 2.	
— petrological diagram	120	— wall core of phase II (area I). Pl. XXXIX, 1.	
Broch at Skitten, Caithness: map of site, .	124	— rubble ramparts of phase III. Pl. XXXIX, 2.	
— plan and section,	125	— entrance in wall fort (phase II). Pl. XL, 1.	
— various sections,	127	— rampart cutting on west (area I). Pl. XL, 2.	
— enlarged plan of part of tower,	128	— hut I (area III). Pl. XLI, 1.	
— outer and inner faces of revetment of rampart. Pl. XXVII, 1, 2.		— stone-lined hollow in hut II (area IV). Pl. XLI, 2.	
— primitive fireplace, Birsay, Orkney. Pl. XXVIII, 1.		— plan and section of cutting F (area II),	201
— radial compartment no. 11. Pl. XXVIII, 2.		— section of cutting D (area II),	202
— wall of tower, and passage. Pl. XXVIII, 3.		— plan and section of inner rampart (area I),	203
— interior of tower, and entrance. Pl. XXIX, 1, 2.		— section through defences in area I, <i>facing page</i>	204
— interior, with sunk boxes, postholes and pavement. Pl. XXX, 1, 2.		— plan and section of hut I (area III), .	207
— compartments 1, 10, 11, 13. Pl. XXXI, 1, 2.		— plan and section of hut II (area IV), .	210
— branch drain and compartment 14. Pl. XXXII, 1.		— pottery,	213
— main drain. Pl. XXXII, 2.		— querns and other stone objects, . . .	216
— socket-hole in entrance passage. Pl. XXXII, 3.		— bronze nail-cleaner, iron object, and whorl,	219
— pit below hearths. Pl. XXXII, 4.		— glass armlet and bead, and iron knife, .	220
— footing of wall north of chamber I. Pl. XXXIII, 1.		Textiles from National Museum, Edinburgh: pattern of Balmaclellan diamond twill, .	226
— chamber II (walls, etc.). Pl. XXXIII, 2, 3.		— pattern of Falkirk tartan	228
— various stones and querns,	139	— photographs of Balmaclellan and Fal- kirk cloths. Pl. XLII, 1, 2.	
— rim fragments of pottery,	142	Roman Road to Raeburnfoot: cuttings above source of Holm Burn. Pl. XLIII, 1, 2.	
Church Bells of Renfrewshire and Dun- bartonshire: details of founders' marks .	149	— distant view of Raeburnfoot from cutting. Pl. XLIV, 1.	
— The Skellat Bell, Dumbarton. Pl. XXXIV, 1.		— cutting east of Watcarrick Dinnings. Pl. XLIV, 2.	
— Disused Bell at Roseneath, Dunbarton- shire. Pl. XXXIV, 2.		Neolithic Pottery from Knappers Farm, near Glasgow: pottery sections,	235
— Disused Bell in People's Palace Museum, Glasgow. Pl. XXXV, 1.		— flint blade,	236
— Disused Bell at Bonhill, Dunbarton- shire. Pl. XXXV, 2.		— neolithic bowl. Pl. XLV, 1.	
— Bell in People's Palace Museum, Glas- gow (finely ornamented). Pl. XXXVI.		Coronation Ampulla of King Charles I: ampulla and its case. Pl. XLV, 2, 3.	
		Scotstarvit "Fort," Fife: general plan, .	241
		— plan (contoured), with excavation area,	243
		— structural remains in central area, .	247
		— central house (phases I and II), . . .	250

LIST OF ILLUSTRATIONS

ix

	PAGE		PAGE
Scotatarvit "Fort," Fife: section through rings in central area	252	Bronze Axes from Rhynie, Aberdeenshire. Pl. LIII, 1.	
— reconstruction of central house,	254	Torcs from Kelton, Lamberton Moor, and Hyndford. Pl. LIII, 2-4.	
— sections through "fort," <i>facing page</i>	256	Gold Armlet from Kirkmaiden. Pl. LIV, 1.	
— plan of excavated area,	256	Pots from Roslin, Fettercairn, Kirkden, and Balbie Farm. Pl. LIV, 2-4, 6.	
Green Craig Enclosure, Fife: plan, with profiles,	265	Cist at Knockhill, Kirkden, Angus. Pl. LIV, 5.	
— ground-plan of excavated area,	267	Cross-slab from Leuchars, Fife. Pl. LV, 1-3.	
— vertical sections, and reconstruction of house,	269	Axe from Loch Kinord, Aberdeenshire. Pl. LV, 4.	
Wag of Forse, Caithness: general plan,	276	"Brass" in Kirkcudbright Museum,	297
— plan of platform, with cist,	278	Long Cist at Leuchars, Fife (sketch),	298
— pottery fragments and sections,	279	Bronze Age Burial, Balbie Farm, Burnt-island (sketch),	300
— hut O, and remains of small wag. Pl. XLVI, 1, 2.		Cinerary Urn from Milngavie, Dunbartonshire, with section,	302
— remains of pre-wag hearth, and built platform. Pl. XLVII, 1, 2.		Glassie Stone, near Aberfeldy (sketch),	305
— view of platform from S.E., and base of outer wall. Pl. XLVIII, 1, 2.		Bronze Pins from Orroch, Fife, and Tarves, Aberdeenshire,	307
— cist in platform, with fitted-in boulders. Pl. XLIX, 1, 2.		Cup-marked stone at Glassie, Aberfeldy. Pl. LVI, 1.	
— west front, with basin. Pl. L, 1.		Shoemaker's measuring rod. Pl. LVI, 2.	
— south aspect, with channel below paving-slab. Pl. L, 2.		Tortoiseshell Snuff-box with miniature of Prince Charles Edward Stuart. Pl. LVI, 3.	
Lincluden Panels and Misericords. Pl. LI, 1, 2.			
Neckslides (18th century). Pl. LI, 3.			
Oak Panels from Greenlaw, Kirkcudbrightshire. Pl. LII.			

L A W S

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND.

INSTITUTED NOVEMBER 1780 AND INCORPORATED BY
ROYAL CHARTER 6TH MAY 1783.

(Revised and adopted December 1, 1947.)

1. The purpose of this Society shall be the study of the ANTIQUITIES AND HISTORY OF SCOTLAND, more especially by means of Archæological Research.

2. The Society shall consist of Fellows, Honorary Fellows, Corresponding Members, and Lady Associates.

3. Candidates for admission as Fellows must sign the Form of Application prescribed by the Council, and must be proposed by a Fellow and seconded by two members of the Council. Admission shall be by ballot.

4. The Secretaries shall cause the names of the Candidates and of their Proposers to be inserted in the billet calling the Meeting at which they are to be balloted for. The Ballot may be taken for all the Candidates named in the billet at once; but if three or more black balls appear, the Chairman of the Meeting shall cause the Candidates to be balloted for singly. Any Candidate receiving less than two-thirds of the votes given shall not be admitted.

5. Honorary Fellows shall consist of persons eminent in Archæology, who must be recommended by the Council, and balloted for in the same way as Fellows; they shall not be liable for any fees of admission or annual subscriptions. The number of Honorary Fellows shall not exceed twenty-five.

6. Corresponding Members must be recommended by the Council and balloted for in the same way as Fellows, and they shall not be liable for any fees of admission or annual subscriptions.

7. Ladies who have done valuable work in the field of Archæology may be admitted as Lady Associates. The number of Lady Associates shall not exceed twenty-five. They shall be proposed by the Council and balloted for in the same way as Fellows, and shall not be liable for any fees of admission or annual subscriptions.

8. Before the name of any person is added to the List of Fellows, such person shall pay to the funds of the Society Two Guineas as an entrance fee and One Guinea for the current year's subscription, or may compound for the entrance fee and all annual subscriptions by the payment of Twenty Guineas at the time of admission. Fellows may compound for future annual subscriptions by a single payment of Fifteen Guineas after having paid five annual subscriptions; or of Ten Guineas after having paid ten annual subscriptions.

9. The subscription of One Guinea shall become due on the 30th September in each year for the year then commencing; and if any Fellow who has not compounded shall fail to pay the subscription for three successive years; due application having been made for payment, the Treasurer shall report the same to the Council, by whose authority the name of the defaulter may be erased from the List of Fellows. Fellows whose membership has lapsed, and who wish to rejoin the Society, may do so either (1) by payment of all arrears of subscription—in which case they shall receive the relative volumes of *Proceedings* if available—or (2) on payment of the subscription for the current year and an entrance fee of two guineas.

10. Every Fellow not being in arrears of the annual subscription shall be entitled to receive the printed *Proceedings* of the Society from the date of election.

11. None but Fellows shall vote or hold any office in the Society.

12. Subject to the Laws and to the control of the Society in General Meetings, the affairs of the Society shall be managed by a Council elected and appointed as hereinafter set forth. Five Members of the Council shall be a quorum.

13. The Office-Bearers of the Society shall consist of a President, three Vice-Presidents, two Secretaries for general purposes, two Secretaries for Foreign Correspondence, a Treasurer, two Curators of the Museum, a Curator of Coins, and a Librarian. The President shall be elected for a period of five years, and the Vice-Presidents for a period of three years. One of the Vice-Presidents shall retire annually by rotation and shall not again be eligible for the same office until after the lapse of one year. All the other Office-bearers shall be elected for one year and shall be eligible for re-election.

14. In accordance with the agreement subsisting between the Society and the Government, the Board of Manufactures (now the Board of Trustees) shall be represented on the Council by two of its Members (being Fellows of the Society) elected annually by the Society. The Treasury shall be represented on the Council by the King's and Lord Treasurer's Remembrancer (being a Fellow of the Society).

15. The Council shall consist of the Office-Bearers, the three representative Members above specified, the Keeper of the Museum, *ex officio*, and nine Fellows elected by the Society.

16. Three of the nine elected Members of Council shall retire annually by rotation, and shall not again be eligible till after the lapse of one year. Vacancies among the elected Members of Council and Office-Bearers occurring by completion of term of office, by retirement on rotation, by resignation, by death or otherwise, shall be filled by election at the Annual General Meeting. The election shall be by Ballot, upon a list issued by the Council for that purpose to the Fellows at least fourteen days before the Meeting.

17. The Council may appoint committees or individuals to take charge of particular departments of the Society's business.

18. The Annual General Meeting of the Society shall take place on St Andrew's Day, the 30th of November, or on the following day if the 30th be a Sunday.

19. The Council shall have power to call Extraordinary General Meetings when they see cause.

20. The Ordinary Meetings of the Society shall be held on the second Monday of each month, from December to May inclusive.

21. Unless special arrangements to the contrary have been made, copyright of the *Proceedings* and of all papers printed therein, as well as of all illustrations, shall belong to the Society. This provision shall not apply to illustrations made from blocks borrowed from outside sources.

22. Every proposal for altering the Laws must be made through the Council; and the Secretaries, on instructions from the Council, shall cause intimation thereof to be made to all the Fellows at least one month before the General Meeting at which it is to be determined on.

LIBRARY REGULATIONS.

1. The Library is open to the public for reference, but the privilege of borrowing books is extended only to Fellows of the Society.

2. No Fellow may have more than five borrowed books in his possession at any one time. Books may not be retained longer than two months, and may be recalled to the Library after a fortnight if required by another reader. If Fellows desire to retain a book for a further period of two months, a written application must be made.

3. The following categories may not be borrowed except on the authority of the Council: MSS. and typescripts; scarce volumes, pamphlets and all works published before 1800; standard works of reference, bibliographies, catalogues and maps; certain standard authoritative works unless duplicate copies are stocked; volumes liable to damage in transit owing to their size, weight or condition. Books, including periodicals, will not normally be lent out within two months of acquisition. Newly acquired works, and some works of reference and standard authorities may, however, be borrowed for one night or from Saturday to Monday morning at the Keeper's discretion.

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5. Loss or damage shall be made good by the borrower, who may be required by the Council to furnish another copy of the entire work.

Infringement of the foregoing rules will render the borrower liable to a suspension of borrowing privileges.

RULES FOR CONTRIBUTORS TO THE *PROCEEDINGS*.

1. Each contribution will be considered by the Editorial Committee and a decision intimated to the sender without undue delay.

2. If the contributor wishes the paper to be read before the Society a date will be arranged, and (if lantern slides are required to be made) the requisite photos and drawings should be handed to the Editor at least one month before the date of the meeting.

3. All slides prepared at the Society's expense become the property of the Society and are filed for general use. This does not apply to slides prepared or furnished by the contributor, though gifts of these are welcomed.

4. The time limit assigned to each paper will be intimated to the contributor, and it is desirable that the reading of the paper (or synopsis thereof) should not exceed that period. If a special précis of the paper is desired for insertion in the Press, that should be handed to the Secretary on the day of the meeting.

5. If the paper is to appear in the *Proceedings* it must be typed or clearly written, and submitted to the Editor in as advanced a state as possible for sending to the printers. Untidy papers that are difficult to decipher or need a lot of adjustment and re-editing may be delayed in publication.

6. To avoid adding to the already high printing costs no considerable alterations or additions will normally be allowed after the type has been set up, unless the author undertakes to defray the cost of such alterations. No major changes can be effected after the article is in page form.

7. Contributors are entitled to receive 30 copies gratis of their paper. Any additional copies required may be had, at their own expense, on application to Messrs Neill & Co., Printers, Causewayside, Edinburgh. Such application must be made before the volume in which the paper appears is issued to Fellows of the Society.

Forms of Bequest.

[With the object (1) of presenting collections of antiquities, books, etc., or aiding the funds of the Society for the purchase of such articles; or (2) to provide funds for excavation¹; or (3) to contribute to the Special Purchase Fund created in March 1948 for enabling the Society to procure for the National Museum of Antiquities objects of special historical and antiquarian interest relating to Scotland which might otherwise be bought up and dispersed at prices beyond the reach of the Society's ordinary income.]

(1) I, A. B., do hereby leave and bequeath to the Society of Antiquaries of Scotland incorporated by Royal Charter, my collection of and I direct that the same shall be delivered to the said Society on the receipt of the Secretary or Treasurer thereof.

(2) I, A. B., do hereby leave and bequeath to the Society of Antiquaries of Scotland incorporated by Royal Charter, the sum of £ sterling [for the General Fund, Excavation Fund, Special Purchase Fund, etc.], and I direct that the said sum may be paid to the said Society on the receipt of the Treasurer for the time being.

¹ Particular fields of excavation can be defined, if so desired, e.g. Roman sites, mediæval period, cairns, brochs, etc.

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Correspondence (including papers for the *Proceedings*) should be addressed to the Assistant Secretary, Society of Antiquaries of Scotland, Queen Street, Edinburgh.

Subscriptions should be sent to the Treasurer, Society of Antiquaries of Scotland, 42 Melville Street, Edinburgh.

I.

THE CHAMBER TOMB OF UNIVAL, NORTH UIST.

By SIR LINDSAY SCOTT, F.S.A., F.S.A.Scot.

The long delay in the publication of this excavation calls for an explanation. The work was begun in 1935 with the consent of the then trustees of the estate,¹ and a brief preliminary report, indicating the importance of the pottery finds which had been made, appeared in December of that year.² Thereafter the trustees were moved to withdraw their consent and, as time passed without prospect of the completion of the work, a fuller note was published of the most interesting of the vessels found.³ It was not till 1939 that the late Mr A. J. H. Edwards, who had then succeeded to the Directorship of the National Museum, and to whom I am much indebted, was able to take action to get consent restored, and the work was completed in the summer of that year. The events of the succeeding years precluded any work on archæology, and the report which is now submitted must, it is feared, suffer from the effect of the vicissitudes to which it has been subject.

The Site.

Unival is an isolated hill rising to a height of 450 feet out of the central plain of North Uist. From the western foot of the hill the land slopes gently to a sandy shore which, having regard to the then higher level of the land,⁴ must have been more than three miles distant from the tomb and beyond the now half-tide islands of Baleshare and Kirkibost. The hill, composed of gneiss which outcrops freely, is now covered with peat, as is most of the land between it and the present shore; no peat underlies the tomb, and none underlies the chamber tomb which lies on the slope of Clettraval, four miles to the north-west,⁵ and it may be assumed that, when the tombs were built, the land between the hills and the sea was largely peat-free. There must also have been considerable tree growth, since Neolithic levels produced willow, hazel, oak, pine, and possibly birch charcoals, while Clettraval produced at these levels birch charcoal, and Eilean an Tighe, a Neolithic site by a loch in the north of the island, birch, hazel and some willow. By Iron Age times peat had replaced wood as fuel, and the only timber found at Unival was willow, and at Clettraval willow and Scots fir.

The tomb lies on the south-western shoulder of the hill on an uneven

¹ I should like to acknowledge the kindness of Captain McErlich of Lochmaddy, then factor to the estate, who throughout gave all assistance in his power. The estate has subsequently been bought by the Duke of Hamilton.

² *P.P.S.*, 1935, 142.

³ *Ibid.*, 1938, 336-7.

⁴ *Ibid.*, 1948, 70, 71.

⁵ *P.S.A.S.*, lxi, 480 ff.

terrace just above the 250-foot contour. South-west of the tomb, and 23 feet beyond the nearest point of the peristalith, is a large and conspicuous standing-stone 5 feet in width and standing 10 feet above the original ground-level with its face towards the centre of the mound.¹ This stone is believed to form an element in the tomb structure. The stones of the cairn had been used in the Iron Age to build a small house and, probably, outbuildings, but apart from these the only visible structures in the neighbourhood of the tomb are the mounds of a hamlet at the foot of the hill a quarter of a mile to the south-east which, to judge from stray sherds, cannot be earlier than the Iron Age. It should be noted, though without suggesting that it need be other than a coincidence, that from the standing-stone and from the centre of the mound, but not from the mound's north-eastern edge, the conspicuous chamber tombs of Cletraval and Barpa Langass are both visible simultaneously on their respective hills.

The successive occupations of the site were these. The first use was as a tomb, a number of burials having been made accompanied with Neolithic pottery, and other burials with Early Bronze Age pottery.² The next occupation was in the Iron Age, when a small house and storeroom were built in the north-east corner of the cairn; the disturbed areas on the west side of the cairn, which were not excavated, probably contain the remains of slighter outbuildings belonging to this house. In the building of this house a number of façade and peristalith orthostats were removed and broken up or otherwise reused; while the tomb chamber was unroofed and taken into use as a cooking-pit. After an interval, later Iron Age people made casual use of the site, probably for summer shielings, and the tomb chamber was again employed as a cooking-pit. There were no indications of Dark Age or later use, save those casual rearrangements of stones to provide temporary shelters which are made by herdsmen of any period. There was nothing in the vicinity to show that stone had ever been removed from the site, and it is most unlikely that this was at any time attempted. The structures found must therefore be interpreted in the light of the material on the site without resort to the convenient hypothesis that material has been removed from it.

The Iron Age House.

The house extended from the north side of the tomb chamber to the northern edge of the cairn, where its construction had involved the destruction of a section of peristalith (fig. 1).^{*} It consisted of two more or less

¹ The stone circle reported in *R.C.A.M., The Outer Hebrides, Skye and the Small Isles*, No. 228, is the peristalith of the tomb.

² The terms "Neolithic pottery" and "Early Bronze Age pottery" are used purely conventionally to describe pottery types, and without any implication that these types belonged to "Neolithic" or "Early Bronze" ages.

^{*} Fig. 1 appears opposite p. 48.

rectangular rooms opening out of each other, and had been hollowed out of the cairn and founded on a foot or more of cairn material. The inner facing walls, which revetted the cairn material behind them, were of dry masonry of poor quality and stood to an average height of 2 feet 6 inches, their original height having probably been little greater. Two entrance passages passed through the thickness of the walls and opened into the living-room on opposite sides of the fire, an arrangement found in recent times in beehive houses and permitting of the weather door being kept closed and the lee door open. The western entrance passage had at its inner end a sill stone built into the wall at either side, and at its outer end a displaced peristalith orthostat had served as a jamb and outer facing wall. Neither passage was wide enough to admit cattle, and it may be presumed provisionally, in the absence of excavation, that the slighter structures within the disturbed areas on the west side of the cairn had provided shelter for animals.

The living-room (Pl. II, 1) was roughly rectangular, 8 feet by 6 feet 6 inches, with its north wall bowed outwards, leaving room to pass round the hearth. At its south-east corner was an indeterminate recess, into which the south wall had in part slipped; at its south-west corner was an aumbry, 9 inches high, 12 inches wide and 18 inches deep, set 6 inches above the base of the wall. The floor, which was at the level of the bottom of the facing walls, was of compacted earth, red-brown in colour and containing patches of thin pan; it was nowhere paved. The hearth was indicated by a pile of ochreous peat, some 2 feet in diameter and containing indeterminate bone fragments, set upon boulders and without a kerb. On and in the floor, but not in the cairn boulders below it, was a scatter of sherds, animal bones, and winkle- and cockle-shells. On the floor beside the aumbry there was a pile some 15 inches in diameter of red-brown clay. In the light of the use of clay for luting stonework observed in other Iron Age houses, this clay may have been intended for lining the aumbry for use as a place of storage.

From the south-east corner of the living-room a passage 3 feet long and 2 feet broad led into the second room. Many sherds and some bones were found on the floor of this passage, and a quantity of slabs may indicate that it was roofed with a corbelled barrel vault. The inner room was roughly rectangular, 9 feet by 5 feet 6 inches, but its north wall, like that of the living-room, was bowed outwards. The southern part of the room was paved with slabs set in thin earth upon cairn boulders at a level of 1 foot above the rest of the floor. North of this dais, and near the centre of the room, was a pile of ochreous peat-ash some 3 feet 6 inches in diameter and 5 to 6 inches thick at the centre, set upon cairn boulders and having no kerb. The dais slightly overlapped the area of peat-ash, but appeared none the less to be an original feature, the intrusion of the ash beneath it

being due to the remaking from time to time of its weak and ill-supported edge. No bones, sherds or other artifacts were found among the peat-ash, or elsewhere in the room, and it is clear that the fire was not used for cooking and that the pile was not a dump of ashes from a cooking-fire. The arrangement of hearth and dais was similar to that currently adopted in the Faeroes in rooms specially built for drying grain,¹ and, although no grain had survived or was identified, this room probably served a similar purpose. Stains

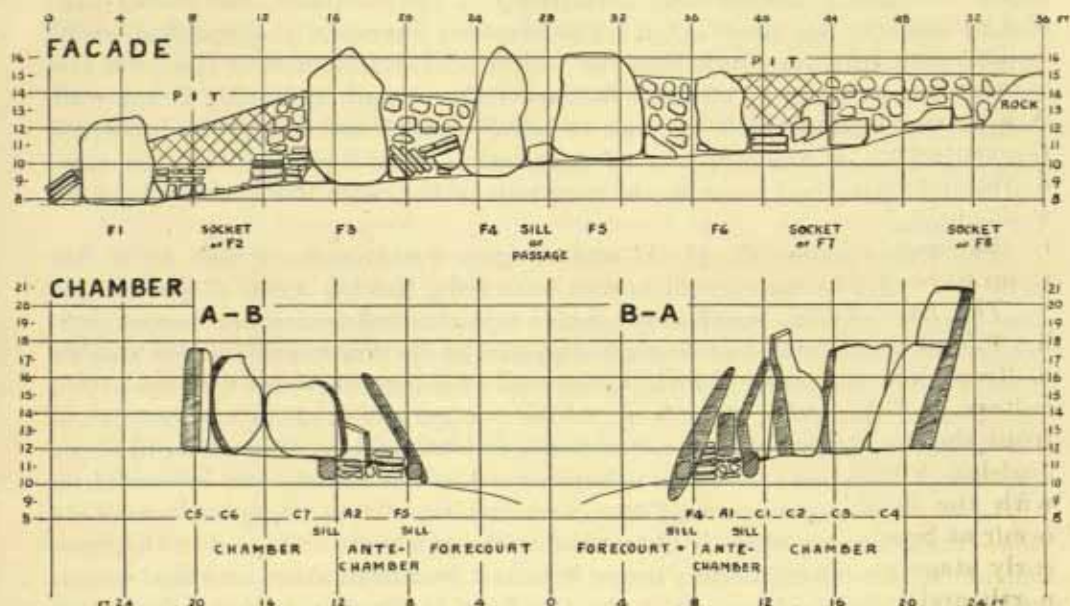


Fig. 2. Façade Elevation, and Sections of Chamber.

of charcoal in the floors of both rooms are likely to represent roofing materials, and the roofs of both may be assumed to have been timber-framed and covered with thatch or turf.

Two deep pits had been left in the cairn when the orthostats F2 and F7 were removed: their size and position are shown in fig. 2. These had been used as rubbish pits and had subsequently become filled by the growth of peat. The F2 pit contained Iron Age sherds and fire-reddened clay; the F6-7 pit contained Iron Age sherds, bone fragments, and a quantity of winkle- and cockle-shells, which were clearly refuse from the house.² The

¹ K. Williamson, *The Atlantic Islands*, 206 ff. Half of the room is occupied by a low rack, on which the grain is spread on a layer of straw, and a peat fire is lit contiguous with this in the middle of the room, which is kept closed to keep the heat in. The other half of the room serves as a threshing floor, and the whole serves at other times for storage. Mr Williamson's book contains many valuable data on material culture and on practices which have died out in the Shetlands, Orkneys and Hebrides without more than casual record, but were once common to all the islands.

² For the classification of finds see Appendix II.

unroofed tomb chamber had been used as a cooking-pit; a heavily burned layer 2 to 3 inches thick (shown by the broad black bands in the profiles in fig. 5) had been laid down over the*funerary deposits and was composed of earth, peat-ash, some charcoal, and numerous Iron Age sherds. At a subsequent stage the surviving long roofing slab had fallen to its present position as shown in fig. 5, and was embedded in the burnt layer; a quantity of small slabs had also fallen and earth had accumulated. This upper stratum of fallen and accumulated material also contained Iron Age sherds, and within it, in the part of the chamber east of the roofing slab, at 14 feet to 14 feet 3 inches above datum, there was a further compacted burnt layer containing red and yellow peat-ash, charcoal and sherds. Scattered Iron Age sherds were also found in the turf throughout the areas adjacent to the central part of the tomb façade, and also in the vicinity of the section of the peristalith excavated at the south-west corner of the cairn. A flint with fairly steep flaking along one edge came from the upper Iron Age level in the chamber, and two thermally fractured pieces with cortex showing them to be derived from beach pebbles from other Iron Age contexts.

The Iron Age Pottery.—The rims and decorated sherds are shown in fig. 3, and the pottery has been briefly discussed in a study of the sequence of Iron Age wares within the area occupied by the aisled round-house culture.¹ The quantity is small and the distinctive sherds few. The ware from the house is comparable in shape with that of the second stage of Jarlshof Village, while the finger-nail decoration on the rims corresponds with the finger-tip decoration there. Horizontal furrows below the rim occur at Scarborough,² and are characteristic of what is still regarded as an early stage at All Cannings Cross, but they may be centuries later in the north and indeed occur in a Class II broch in Orkney which can hardly have been built much before A.D. 100.³ The second stage at Jarlshof—or at least the introduction of the round-houses which belong to that stage—has been dated to the first century A.D. in the study of the aisled round-house culture mentioned above and, making all allowance for the extreme remoteness of the Shetlands, the Unival house cannot well be dated earlier than the first century B.C.

The pit contiguous with the house, and the lower Iron Age stratum in the tomb chamber (F6-7 and A7 in fig. 3), each produced one sherd of more or less distinctive shape, and both are consistent with belonging to the ware used in the house. In contrast with these the pottery from the upper Iron Age stratum in the tomb chamber (A6 in fig. 3) includes two sherds belonging to the aisled round-house culture: a sharply everted rim and a much abraded example of the undulating line pattern executed in relief technique. One scrap from pit F2, and possibly a second, belong to the

¹ *P.P.S.*, 1948, 58.

² Midhowe, *P.S.A.S.*, lxxviii. 505, fig. 50, 10.

³ *Arch.*, lxxvi. pl. xxi, 6, and fig. 55.

same pot as the latter, and three rim sherds from the vicinity of the southern façade (F3-4 and F4-5 in fig. 3) are perhaps more likely to belong to this

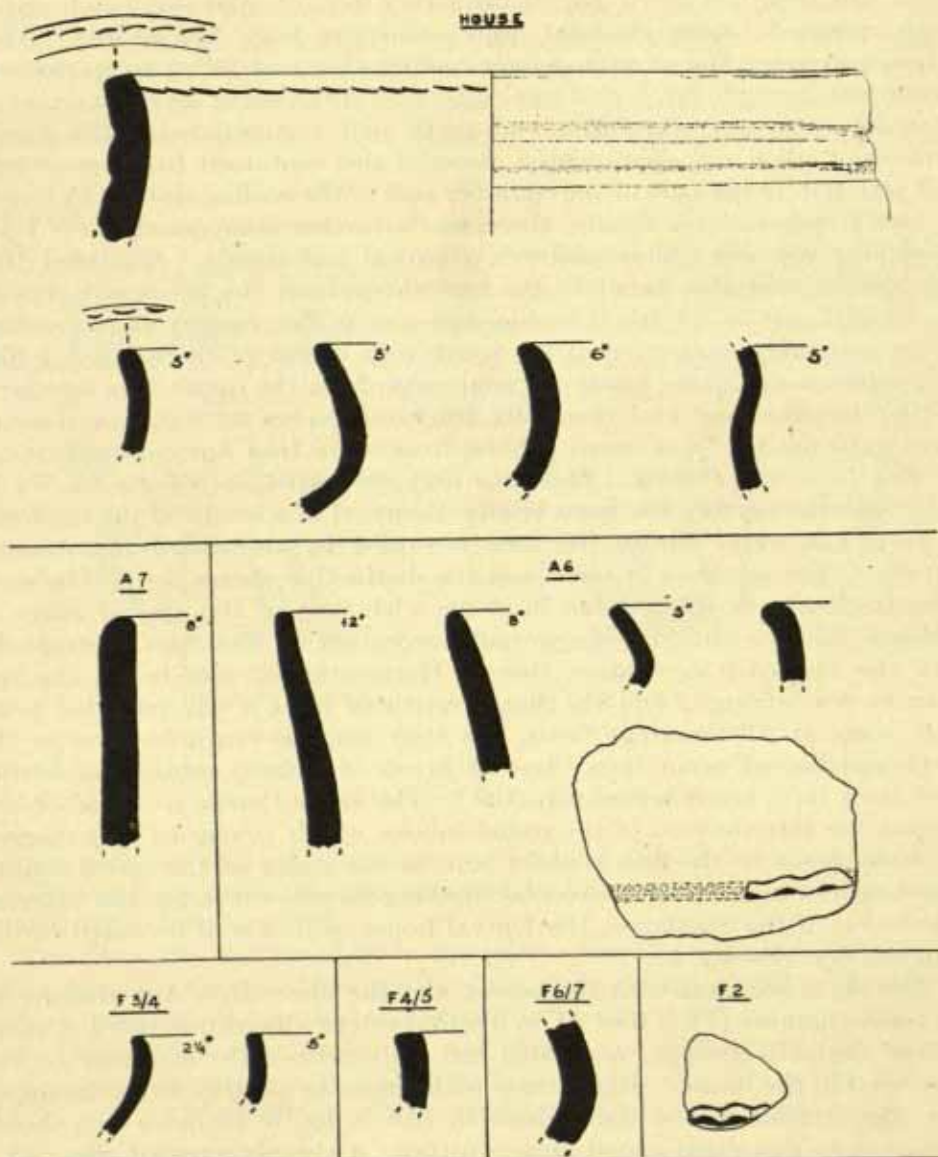


Fig. 3. Iron Age Pottery ($\frac{1}{2}$).

occupation than to the earlier one. The second Iron Age occupation of the house accordingly fell within the period of the aisled round-house culture,

though perhaps late in that period, and within the early centuries of the present era.

Character of the Iron Age Occupations.—In a house with a paved floor broken pottery is almost entirely removed by sweeping, but this house was unpaved, and the paucity of the pottery finds from its floor and the near-by rubbish pit argues a low level of culture. The slightness of the building itself argues a short life. The main occupation may be assumed to have been cattle farming, and the only identifiable bones were a lower molar of a small ox from the house and two premaxillæ of a small ox from the neighbouring pit; sheep farming was not evidenced either by bones or by textile working tools.¹ Nor were there fish-bones or fishing equipment, though a moderate quantity of shells show occasional visits to the fairly distant shore to dig cockles and gather winkles. Agriculture has been inferred from the arrangement of the storeroom for grain-drying, but at the altitude of the site it must have been secondary to cattle farming. The house may therefore be concluded to have been that of a neatherd living at a low level of culture and probably a little prior to the arrival of the aisled round-house culture in the later first century B.C., though the survival of a primitive settlement such as this into the period of that advanced culture is not to be excluded.

The second Iron Age use of the site fell within the period of that culture. As no structural remains were identified, the site may merely have been used as a place for temporary shielings occupied for the summer pasturing on the hill of animals belonging to the farms on the fertile machair land along the shore.

The Structure of the Tomb.

The chamber lies within a wedge-shaped tomb enclosure, which, however, does not depart very widely from a square (fig. 1 and Pl. I). The façade, which forms the eastern side of this enclosure, is not quite straight but bowed gently outward in the middle. A portal in the centre of the façade opens into a small antechamber, and this in turn into the chamber. The chamber, antechamber and façade are not co-axial the one with the other, but, for simplicity of description, the axis of each will be conventionally taken as east-west.

The portal is composed of two orthostats divided by a sill, the one 8 feet in height and standing 5 feet 6 inches above the sill, the other shorter and standing slightly lower (fig. 2 and Pl. II, 2). The antechamber is walled on each side by a small orthostat supplemented by well-built dry masonry. A second sill divides it from the chamber, which is egg-shaped, with diameters of 7 and 6 feet. This is walled with large orthostats set contiguously, their

¹ I am greatly indebted to Dr F. C. Fraser of the British Museum (Natural History) for examining the animal bones from the Iron Age levels.

feet resting on, but not in, the floor; they are maintained in positions nearly, but not quite, vertical by the pressure of the cairn behind them and by their lateral pressure the one upon the other. Small gaps between their feet had been filled with rough dry walling, now collapsed. The western orthostat

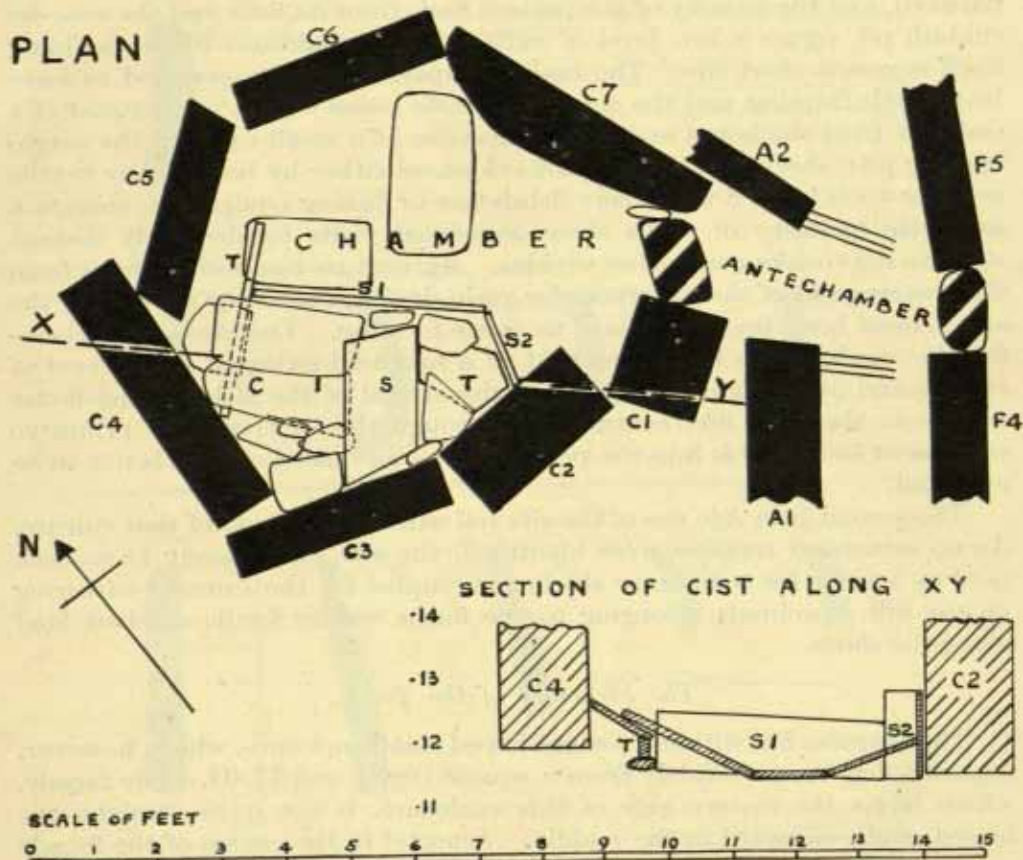


Fig. 4. Plan of Chamber, and Section of Cist.

C4 has a broad ledge on its inner face at 6 feet above the floor and rises 3 feet above that. In the south-west corner of the chamber is a burial cist with steeply sloping head and foot which is very carefully built with thin slabs (plan and section in fig. 4 and Pl. III, 1).

Nothing survived of the roof except small fallen slabs and the long lintel shown in fig. 5. The roof of the antechamber had presumably been level with the tops of A1 and A2 and about 2 feet 6 inches above the floor. One end of the long lintel rests on the wall orthostat C7; the other end was found resting on the filling of the east end of the cist and had originally been supported on the shoulder of C2, bearing against C3. The lower face

of this lintel, originally some 4 feet above the floor, must have determined the level of the roof over the eastern part of the chamber. The height of the roof over the main part of the chamber is determined by the heights of the broad ledge on C4 and of the tops of the neighbouring orthostats at 6 feet above the floor. If this western part of the chamber had been spanned from wall to wall by single slabs, these would have been considerably larger than the long lintel which survives, and it is rather improbable that the Iron Age house builders should have broken up and taken away such larger slabs and left the long lintel untouched. The quantity of slabs at the base of the deposit in the chamber containing Early Bronze Age pottery points to fallen corbelling. In the light of these considerations, and of local practice as exemplified in other (unexcavated) round-chambered tombs, the western part of the chamber may probably have been roofed with a circular corbelled vault springing from C3, C5, C6, the ledge of C4 and the long lintel.

Since the roof was thus tripartite, at 2 feet 6 inches, 4 feet and 6 feet above the floor, it is arguable that the western part of the chamber would most correctly be referred to as the "chamber," the eastern part as the "antechamber," and the antechamber as the "passage." This terminology would get some support from the evidences of ritual discussed below. Such considerations must, however, be somewhat speculative, and it has not seemed necessary in this report to alter the terminology used in the course of the excavations.

The façade is composed of orthostatic slabs, which increase in height towards the portal, and of panels of well-built, though now slipped, dry masonry (fig. 2). Of the orthostats, F2, F7 and F8 had been disturbed by the Iron Age activities already mentioned; the sockets of F2 and F8 were precisely determined, that of F7 only approximately. F2 is missing; part of F7 lies horizontal on cairn material as shown in fig. 1, its eastern part having apparently been broken off with a maul and removed; F8 lies intact, fallen forward over the vertically set slab which had secured its foot. The other five orthostats survive uninjured. They stand with their feet on, and not in, the original ground surface, tilted back from the vertical and resting against the steeply piled face of the cairn. Behind they are supported by massive stone abutments built into the cairn face, and are wedged out by large slabs inserted between themselves and these abutments. In front, their feet are secured from slipping outward by a tight pavement formed of slabs laid horizontally, and of small blocks or vertical slabs jammed between these and the orthostat foot. Above this layer are small slabs set generally upwards and inwards (Pl. II, 2), mixed with a few long blocks similarly set as struts, and some small boulders. The whole is compacted with small stones and earth to form a low containing bank not more than 18 inches high. The lateral stability of the orthostats is secured

by triangular gusset blocks set laterally against their feet, sometimes supplemented by slabs set diagonally (Pl. III, 2). The latter make a sort of herring-bone dry walling, and compose, together with horizontally built dry walling, the low panels of masonry that intervene between the orthostats (fig. 2).

The peristalith which walls the other three sides of the tomb enclosure was found, where excavated, to be constructed generally similarly to the façade. In the south-west corner P7 and P9 were found lying horizontal in front of their abutments; P8 is missing, but its socket is defined by an undisturbed lateral gusset slab to the east. In the south-east P10 is erect, with its lateral gusset abutment to the east of it, but beyond this the wall has been largely removed and it is not clear whether P11, of which the head is sheered off, is a peristalith orthostat set contiguously with P12, as shown in fig. 1 or whether both P11 and P12 served as the abutments for a larger orthostat. In the north-east P4 and P3 are erect, P2 is displaced to form a jamb and outer wall-face to the house and, beyond the house, P1 lies fallen forward on its face in front of its rear abutment. Throughout this much robbed section there is no trace of dry-built masonry, and the evidence from the other excavated sections is too incomplete to establish that the peristalith orthostats were regularly joined by lengths of built walling: it is very probable from the analogy of other tombs that they were, but it remains a possibility that the rough revetting of the cairn face was accepted as a sufficient wall.

Façade and peristalith had originally been fully visible features. The cairn had first been built and its faces revetted to a steep angle with slabs which formed the orthostat abutments; the orthostats had then been erected and, apart from the low containing bank which secured their feet in front, the cairn had not extended outside them. Accordingly, when orthostats subsequently fell forward they lay horizontal on their faces on the turf, and were in due course grown over with peat. As is seen from the contours in fig. 1, the depth of cairn over the western part of the tomb enclosure is slight, and over the eastern part is insufficient to reach the tops of the façade and chamber orthostats. It nowhere exceeds 4 feet and, while the disturbance caused by the building of the house makes it impossible to be sure that it was not originally mounded higher round the chamber, it can hardly have covered the roof and certainly did not reach the top of the tall western chamber orthostat C4.

The detached standing-stone is 11 feet 3 inches in total height and must have stood some 10 feet clear of the original surface. Its irregular base is supported underneath with chock stones, and its stability secured by layers of slabs laid horizontally to form a tight pavement all round the foot of the stone and bearing on the lower part of its vertical faces. The method being the same as that used to secure the feet of the façade orthostats, it seems

safe to conclude that the stone forms part of the tomb structure, despite the fact that in excavating it no finds were made.

Thus the original aspect of the tomb was a broad wedge-shaped enclosure with a conspicuous detached stone near its south-west corner, its eastern face forming a slightly bowed façade rising in height to a central portal. This façade was built of orthostats alternating with panels of carefully built masonry; the other three faces of the enclosure were walled with smaller orthostats joined by possibly rougher masonry. The contained cairn formed a more or less level platform, filling the enclosure to a height a little below the top of the façade at the eastern side, and mounded up on the southern, but standing to no more than one to two feet on the west and north. The chamber, which opened through the portal in the middle of the façade, was largely concealed, but its roof was in all probability visible and conspicuous, and its tall western orthostat certainly was.

Deposits in the Chamber.

The filling of the chamber was as follows:—

- (1) The undisturbed greenish-yellow clay which overlies the solid rock.
- (2) Except in the cist, a sterile layer 2 inches thick of charcoal-stained earth, not distinguishable in character from (4) but containing no funerary deposits.
- (3) In the cist, immediately upon the slab flooring, dark brown sticky material; this was sterile as regards its lowest two inches but above contained considerable bone remains.
- (4) Above (2) outside the cist, and above the bone layer in the cist, up to a general level of 12 inches above the clay floor, fairly finely divided earth and some small fallen slabs; the earth was dark brown in colour except where blackened by charcoal. This layer contained, outside the cist, slight bone remains.
- (5) Above (4) a considerable quantity of fallen slabs and brown earth free of charcoal. No bone was preserved in this layer.
- (6) Above (5) a layer 2 to 3 inches thick of heavily burned material consisting of earth, peat-ash and some charcoal. This layer contained Iron Age sherds, and represented the use of the partially unroofed chamber as a cooking-pit by the people who built the house. This layer is shown by a broad black band in the sections in fig. 5.
- (7) Immediately overlying (6) was the fallen roofing slab which still remains and a considerable quantity of small slabs.
- (8) Earth containing further occupational debris of the Iron Age and, in the eastern part of the chamber, a layer of peat-ash and charcoal at 14 feet to 14 feet 3 inches above datum.
- (9) A layer of peat and then the modern turf.

The cist was built on the undisturbed clay and was an original feature of the chamber (fig. 4 and Pl. III, 1). Its side slab, S1, was set in a cutting 3 inches deep in the clay, and this contained charcoal-blackened earth to its bottom. This might indicate that the debris of fires littered the floor at the time of construction but is sufficiently explained by subsequent infiltration. The space under the sloping end slabs of the cist had for some time remained hollow, since it contained three fragments, one a large one, of the vessel 10 and the indeterminate bone scraps B5 and B6 (App. I). In the course of the centuries it had filtered up and was full of the blackened earth which had silted into it from above. The end slab of the cist, S2, was not fixed, but rested against the side slab, S1.

Outside the cist the floor of the chamber was not paved. A long thin slab lay on the clay floor beside the cist at its western end, and a larger thin slab sloped slightly upward from the east end of the cist to the north wall of the chamber, where it was supported on blocks some 6 inches above the floor; bone fragments were found under its upper end and it may or may not be original. In the eastern part of the chamber a few small slabs lay erratically on the clay floor. The antechamber, on the other hand, had been levelled up with blocks of stone to the height of the chamber floor and roughly paved above this block filling.

One object was found in stratum (2) lying directly on the clay floor, a large stone ball. Stone balls have been found in other chamber tombs in positions which suggested that they were foundation deposits, and this may be such, but it could equally be a tool used in the tomb's construction; it does not appear to be a funerary deposit. Apart from the ball this stratum was sterile and may be taken to be the trampled layer resulting from the building of the tomb. Such sterile layers are normal in chamber tombs, and are recorded to have been artificially laid in some tombs in north-east Ireland.

Stratum (4), which belongs to the period of funerary use accompanied by Neolithic pottery, was heavily impregnated with charcoal, but very unequally. In the cist the filling was saturated with charcoal, and much large charcoal overlay the surviving skeleton; in the centre and west part of the chamber darkening was general, but completely blackened soil occurred in layers, which no doubt consisted of the scattered debris of successive fires; in the eastern part of the chamber there was relatively little charcoal. There was no peat-ash in this stratum, and the woods which were identified were willow, hazel, oak, pine and possibly birch; in stratum (6), which represented Iron Age use, there was much peat-ash and the only wood occurring was willow.¹

¹ Where willow is mentioned there is the possibility that the wood may really be poplar, the two woods not being distinguishable. I am greatly indebted to Mr M. Y. Orr of the Royal Botanic Garden, Edinburgh, for the identification of the charcoals.

There was a fair number of small slabs in stratum (4), particularly near the walls; these were presumably stones used as dry walling to fill up interstices between orthostats, or to level their tops, which had worked loose and slipped down. The fact that they lay in some cases under or over pots or groups of bones lying near the west and north walls need indicate no more than that slabs already fallen might be placed to support or protect the pot or group of bones when that was placed in its present position. In the antechamber there was a considerable quantity of slabs; they were relatively evenly laid, and overlay fragments of a believedly early pot and underlay sherds of other pots which, from their stratification elsewhere, were regarded as comparatively early. It is thought that these slabs were the lower part of the blocking of the entrance after the first interment, which were not removed when the tomb was opened for the second one. A substantial number of blocks and slabs lying in the south-east corner of the chamber between C1, C2 and S2 may be either fallen dry walling or blocking material pushed inwards at the first re-opening of the tomb.

A considerable quantity of slabs at the base of stratum (5) is likely to represent some partial collapse of the corbelling of the roof upon the silted-up floor formed by the surface of stratum (4).

The thick burned layer, stratum (6), effectively sealed the funerary contents of the tomb. At the time of its laying down the still surviving roofing slab of the chamber was in place, for when it fell it was embedded in this layer; but the chamber must have been otherwise unroofed, since it was in use as a cooking-pit by the neighbouring Iron Age dwellers. The latter probably improved their shelter by building loosely on the top of the orthostats, for the immediate succeeding layer, stratum (7), was composed of a quantity of fallen small stones, as well as the then fallen roofing slab. Above this, in stratum (8), was further Iron Age occupational debris, including, in the eastern part of the chamber, the remains of further fires.

The Sequence of Burials.

A report on the surviving bones by Dr A. E. J. Cave, to whom the writer is much indebted, is given in Appendix I. In the strongly acid soil bone had survived only if heavily burned and also situated in a well-drained spot, and the sole substantial group of bones found, B3 (1, 2, 3), were those on the sloping head slabs of the cist. This group represented the extremely decayed remains of the upper half of the skeleton of a mature woman, the last burial to be made in the cist. The bones were in order, so far as could be judged in their state of dissolution, and the body had lain on the right side with head to the west.¹ Though much distorted by fire these bones had

¹ The dissolution of the bones was such that it was necessary to remove them on a trowel with the earth and to dry them in the air. This was done section by section, but, owing to a misunderstanding, the three sections were associated into a single group when examined (B3 (1, 2, 3) in App. I).

not been cremated, and their condition must be due to the piling of burning charcoal on them as they lay in the cist. Since it would be impracticable to light and maintain a substantial fire in so cramped and ill-ventilated a spot, the charcoal must have been brought into the tomb already burning, and tipped out upon the cist. Even so, the heat generated would not have sufficed to consume the flesh and heavily to burn the bones within; we must therefore suppose that the flesh was already decayed when the burning took place.

From this consideration, and from the fact that the bones had not been subsequently disturbed, it follows that, contrary to the usually accepted view, the introduction of fire into the tomb occurred at a late stage in the funerary ritual, and not as the first stage of a new funerary cycle when the tomb was being cleared for a new burial. Presumably the bringing in of the fire constituted the last stage of the funerary ritual, and was designed to drive the ghost away from its then decomposed body, and from the tomb, in order that it might take its departure to the place appropriated to disembodied spirits. It may also be inferred that the removal of the bones from the cist did not take place at this stage, but later, at the beginning of a new funerary cycle.

With the bones of the woman in the western part of the cist were found also a handful of rib bones of smaller size, and these, though much fire-distorted, can be identified as those of a younger human individual under age twenty-one. The smallness of the cist excludes the possibility that the mature woman and the younger individual were deposited simultaneously, and also the possibility that the body of the former was laid upon the skeleton of the latter. We may therefore infer that the handful of rib bones represented an earlier burial of which the remains had not been quite completely removed from the cist. In the centre and the eastern part of the cist no bones had survived save the indeterminate fragment B3 (4). Under the head and foot slabs respectively were the slight fragments B3 (5) and B3 (6); it has already been suggested that these had filtered into the hollow spaces from the slabs above.

Outside the cist the only significant groups of surviving bones are B0, B1 and B2, all lying near the west or north walls of the chamber. The group at B0 outside the cist and close to the orthostat C5 seems to be the slight residue of a detached skull. The miscellaneous collection at B1 near the middle of C6 cannot have derived from a skeleton deposited complete, but is the remains of a disordered pile of bones of which the most heavily burned and best drained parts have survived. The unidentifiable fragments found at two levels at B2 in the angle between C6 and C7, and separated from one another by the flooring slab which sloped up to the north wall, where its end was supported 6 inches above the floor, offer no significant evidence that complete burials had been made at the places where they now

lie. The most probable view is that all these bones represent bodies which had originally been buried in the cist, had been partially burned after decomposition there, and had been subsequently removed and piled against the north or west wall of the chamber. The relative absence of the debris of fires in the north part of the chamber is additional evidence that bones surviving there owed their burning to their earlier presence in the cist. The evidence provided by the pottery distribution (below) shows that piles of debris had accumulated against the chamber walls, and principally against the north wall; this, it would seem, was the normal place of disposal of removed bones, and there, with accumulated earth, they had gradually piled up to a height of not less than a foot.

A single unidentifiable chip of bone (B4) was found outside the cist at the junction of its walling slabs S1 and S2, and another (B5) in the corner between the orthostats C1 and C2.

The Sequence of Pottery Deposits.

Fourteen Neolithic¹ and three Early Bronze Age¹ vessels were deposited in the tomb; of these, one was complete, eleven have been restored, and the profiles of the other five can with varying degrees of conjecture be reconstructed (figs. 6 and 7 and Pls. IV-IX).² In addition, ten sherds survive of a cordoned vessel of uncertain type, and about twenty miscellaneous and very small sherds not attributable to identified pots. Some sherds show decomposition as a result of heat, while trampling in the centre of the chamber may have reduced some to grit; substantial parts of some pots are however missing, and as they were not found in the forecourt it must be supposed that sherds were deliberately taken away from the site, perhaps as amulets, during the period of funerary use of the tomb.

Fig. 5 shows in plan and elevation the positions of pots of which substantial parts were found associated in a group; the position is indicated by the number of the pot and, where substantial parts of a pot were found in each of two different places, each place is marked, as 1A and 1B. Reference to other sherds will be by the areas and strata shown in fig. 5; thus A1, 11 will indicate a position in area A1, stratum 11 (*cf.* Appendix II).

To save repetition, a schedule is here given of the data regarding the seventeen pots which are relevant to the succeeding discussion. In this schedule, anticipating the discussion, the pots are classified in groups representing the most probable order of their original deposition in the tomb. This classification should be understood to be tentative inasmuch as absolute stratification is, in the circumstances of the use of the tomb, an unreliable guide. Broadly the criteria which seem valid to determine relative date

¹ In the senses stated on p. 2 note 2.

² I am greatly indebted to Professor Stuart Piggott for the drawings in figs. 6 and 7

of deposition are: relative stratification of groups of sherds lying near one another against the wall of the chamber; relative stratification in the antechamber of sherds found there and belonging to vessels of which the main parts were in the chamber; relationship to successive clearings of the cist. These criteria, as will be seen, are far from sufficient to determine a complete time sequence.

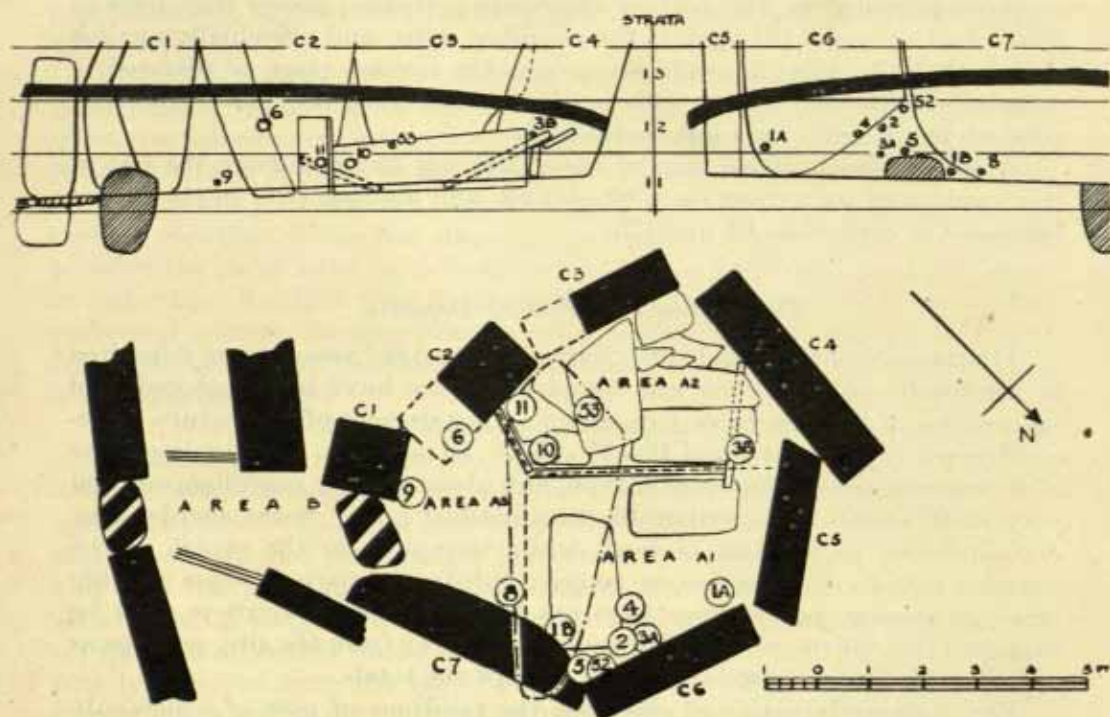


Fig. 5. Pottery Find Plan.

Group (i).

Pot 13. Small part surviving. Scattered in antechamber, B11, under the unremoved blocking of the entrance. Probably belonging to the first burial in the tomb.

Pot 9. Nearly complete. Main fragments at 9 at 2 inches above floor; others in A3, 11 and two in cist. Possibly belonging to the first burial.

Group (ii).

Pot 8. More than half surviving. Main fragments at 8 at 2 inches above floor; others in A3, 11; two in antechamber, B11, stratified over

the unremoved blocking of the entrance. Belonging to second burial at earliest.

Pot 1. Almost complete. Half at 1A at 7 inches above floor and half at 1B at 2 inches above floor. The second half had been deposited before debris had accumulated at 1B; the first half was in the pile at 1A of which the surviving bone remains are the mixed collection B1. Belonging to second burial at earliest, unless the half at 1A was placed there with the bones of the earliest burial when these were removed from the cist.

Group (iii).

Pot 5. Complete. This stood intact, wedged between the orthostats C6 and C7 at 6 inches above the floor and at the level of the upper end of the sloping floor slab. Being intact and wedged in the cranny, it might have been placed in its present position before debris had accumulated to a depth of 6 inches against the wall; it may therefore belong to an earlier group.

Pot 3. More than half surviving. Main fragments at 3A at 6 inches above floor; other sherds on the head slabs of the cist at 3B. The latter sherds had presumably been left behind when the main part of the pot was removed to 3A, and the position in the time order is to be judged from the level to which debris had accumulated there.

Group (iv).

Pot 12. Half surviving. Fragments scattered in A1, 12 except one in A1, 11.

Pot 14. Round base and part of wall and hollow neck surviving; no rim or decorated sherds surviving. Fragments scattered in A1, 12 and A3, 12 and one in A3, 11. Many sherds decomposed, apparently by reburning, and surface shaled off. (Not illustrated.)

Pot 7. Nearly complete. Main fragments in the disturbed earth¹ in stratum 12 against the orthostat C5; other sherds scattered in A1, 12. The pot had been heavily reburned.

Pot 51. Almost complete. All sherds were in the disturbed material in stratum 12 beside the orthostat C5, near which the pot must have been deposited. Owing to the disturbance it cannot be said whether or not this pot was stratified over pot 7, but the vertical distance between the two must have been slight. The pot may however belong to Group (vi).

Pot 2. Two-thirds surviving. Main fragments at 2 at 12 inches above floor; others scattered in A1, 12. Stratified over pots 3 and 5.

¹ A shepherd boy, who had watched the digging, returned and dug a small hole, limited to stratum 12, beside the orthostat C5; thence he extracted one sherd of pot 7 and two of 51. He washed these, as he had seen done, and left them beside the washing-hole on the turf. His intention was helpful, but as the remaining sherds of 51, and some of the sherds of 7, were found among the earth disturbed by his digging, the relative stratification of these two pots was most unfortunately lost.

Pot 4. Half surviving. All sherds found in a group at 4 at 9 inches above floor and probably deposited intact there. Stratified over pots 3 and 5.

Pot 6. Nearly complete. Main fragments at 6 at 12-15 inches above floor resting on a tilted slab, itself supported on fallen blocks; all other sherds among the blocks at levels down to 6 inches above the floor. Presumably intact when placed on the slab; when broken the sherds had fallen to the then level of accumulation of debris. The date of deposition was not earlier than the date of this accumulation. Stratified over pot 9.

Group (v).

Pot 11. Nearly complete. All sherds in a group lying on the sloping foot slabs of the cist at 11. The pot belonged to the last burial in the cist.

Pot 10. Two-thirds surviving. Main fragments in a group lying on the sloping foot slabs of the cist at 10; three sherds, including one large one, silted down under the foot slabs; three sherds in the antechamber in B, 12 and B, 13. These last were stratified over sherds of pots 8 and 13 and under sherds of pot 53. Presumably belonging to the last burial in the cist.

Group (vi).

Pot 53. Flat base and large part of one side and small part of rim surviving. Lower part found crushed but in order at 53 at 8 inches above the floor in the filtered earth with which the cist had by then become filled to the brim; two rim sherds and one other sherd lying alongside at the same level and two sherds in the antechamber in B, 13. These last were stratified over sherds of pots 8, 11 and 13. The part of the pot at 53 had been crushed under the lower edge of the fallen roofing slab, the great weight of which had pressed it down into the loose filling of the cist on which it had been lying, and had pressed on top of it the thick burned layer representing the first Iron Age use of the chamber as a cooking-pit.

Pot 52. Small part surviving. Flat base at 52 at 15 inches above floor; two rim sherds and one other sherd scattered in A1, 12. Stratified over pots 1, 2, 3, 4, 5 and 8. This pot appears to be the latest funerary deposit in the tomb.

Distribution of Surviving Sherds.—Fig. 5 shows, from the plan, that pots were deposited either in the cist or against the walls of the chamber; and, from the profiles, that the accumulation of debris against the walls had been greatest on the north side against the orthostat C6 and in the corner between C6 and C7. It has already been suggested that this growth of debris resulted from use of this part of the chamber for piling bones removed from the cist. That the accumulation here formed a solid pile we can infer from the fact that sherds of the pots of which the main fragments were against

this wall had not filtered down to lower levels. This is in contrast to the position in the south-east corner of the chamber where, though the main fragments of pot 6 were at a high level on a slab resting on fallen blocks, sherds of the pot had filtered down among the blocks to a level of 6 inches above the floor, a level which evidently was that of the accumulation of debris at the time. This uneven rate of accumulation must be borne in mind in judging stratification.

The indications of the disturbance of pots and the scattering of sherds must also be considered. There is ample evidence of the disturbance of pots in the cist. Against the north wall and in the south-east corner, on the other hand, there can have been little disturbance, for pots 4, 5 and 6, though two of them were broken, remained unscattered. In the centre of the chamber there had been heavy trampling and all the sherds found were small. In the eastern part, area A3, three pots had been deposited against the walls, but apart from these no sherds were found except a few of pot 14, the slight remains of which were divided between areas A3 and A1. It would seem that, outside the cist, pots had remained very much where they were put, whether on original deposition against the walls or on removal from the cist and disposal against the walls.

In the antechamber, under the 6-inch layer of slabs which, it has been suggested, represented unremoved blocking, were the surviving parts of pot 13; above that layer were two sherds of pot 8, and above these three of pot 10, and above these two of pot 53. The total depth of deposit containing sherds, including the slab layer, was 20 inches, the greater depth of deposit as compared with the chamber being due to the downward slope of the chamber floor towards the door and to water-silting of earth against the door blocking. The presence in the antechamber of two to three sherds of each of the pots 8, 10 and 53, and particularly the presence of sherds of pot 10, of which the remainder was wholly on or under the sloping foot slabs of the cist, can hardly be attributed to chance. An explanation, which would account also for the loss of some part of nearly all the pots in the chamber, is that parts of pots were taken from the tomb as amulets, and that some of these sherds were dropped in wriggling out of the narrowly constricted entrance. In the light of the evidence of the last burial, to which pot 10 belonged, this would have occurred at the final stage in the funerary ritual when burning charcoal was placed on the cist and, as has been supposed, the ghost was driven from the tomb.

Deposit of Pots in the Cist.—We have seen that there were probably two pots, 10 and 11, which were placed in the cist with the last burial there. There is positive evidence that pots 3 and 9 had originally been deposited in the cist and later, when broken, removed thence, since sherds of each were found there. There is presumptive evidence that some other pots had originally been in the cist. Thus, in the case of pot 1, it appears a good

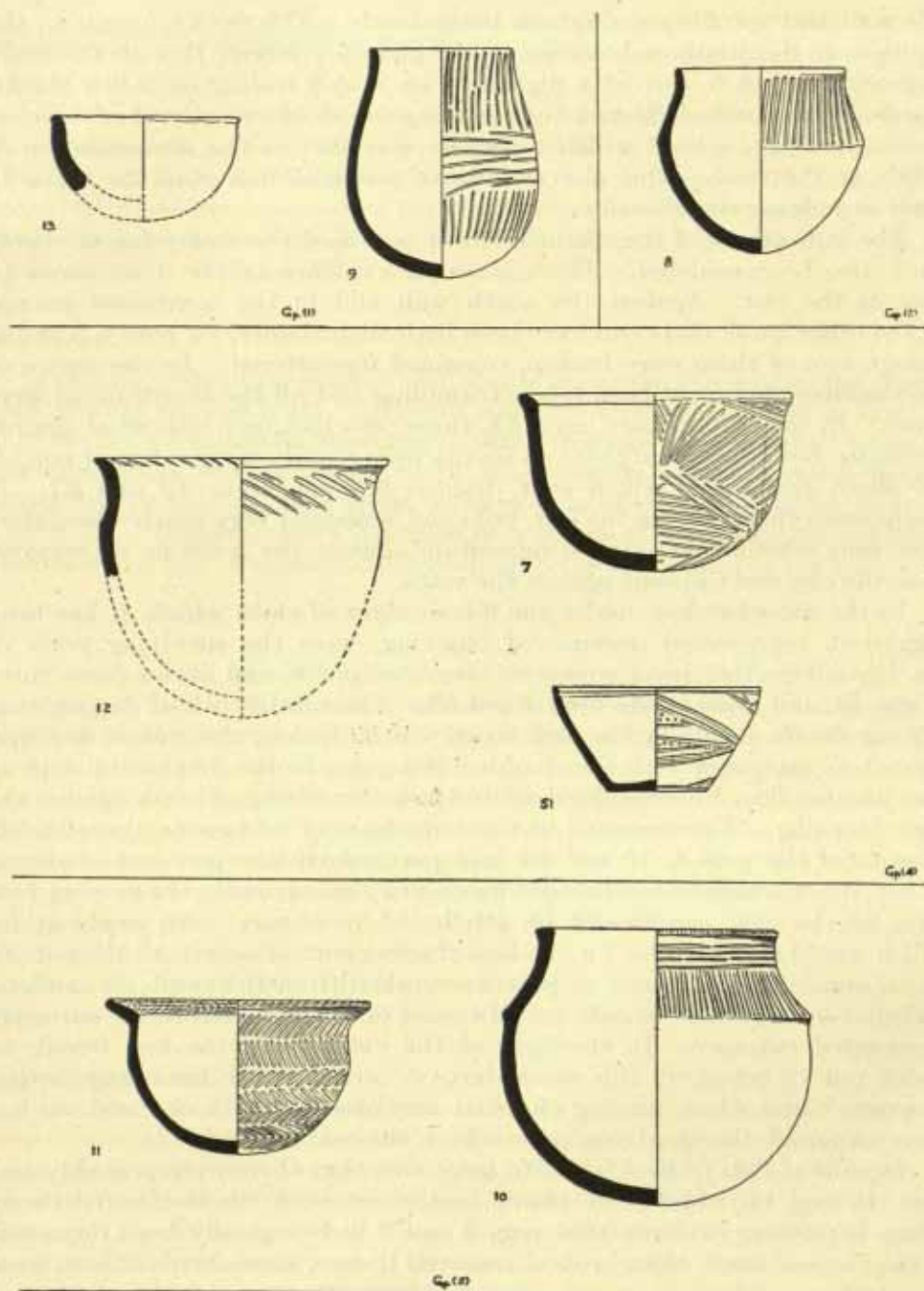


Fig. 6. Reconstruction of Funerary Pottery.

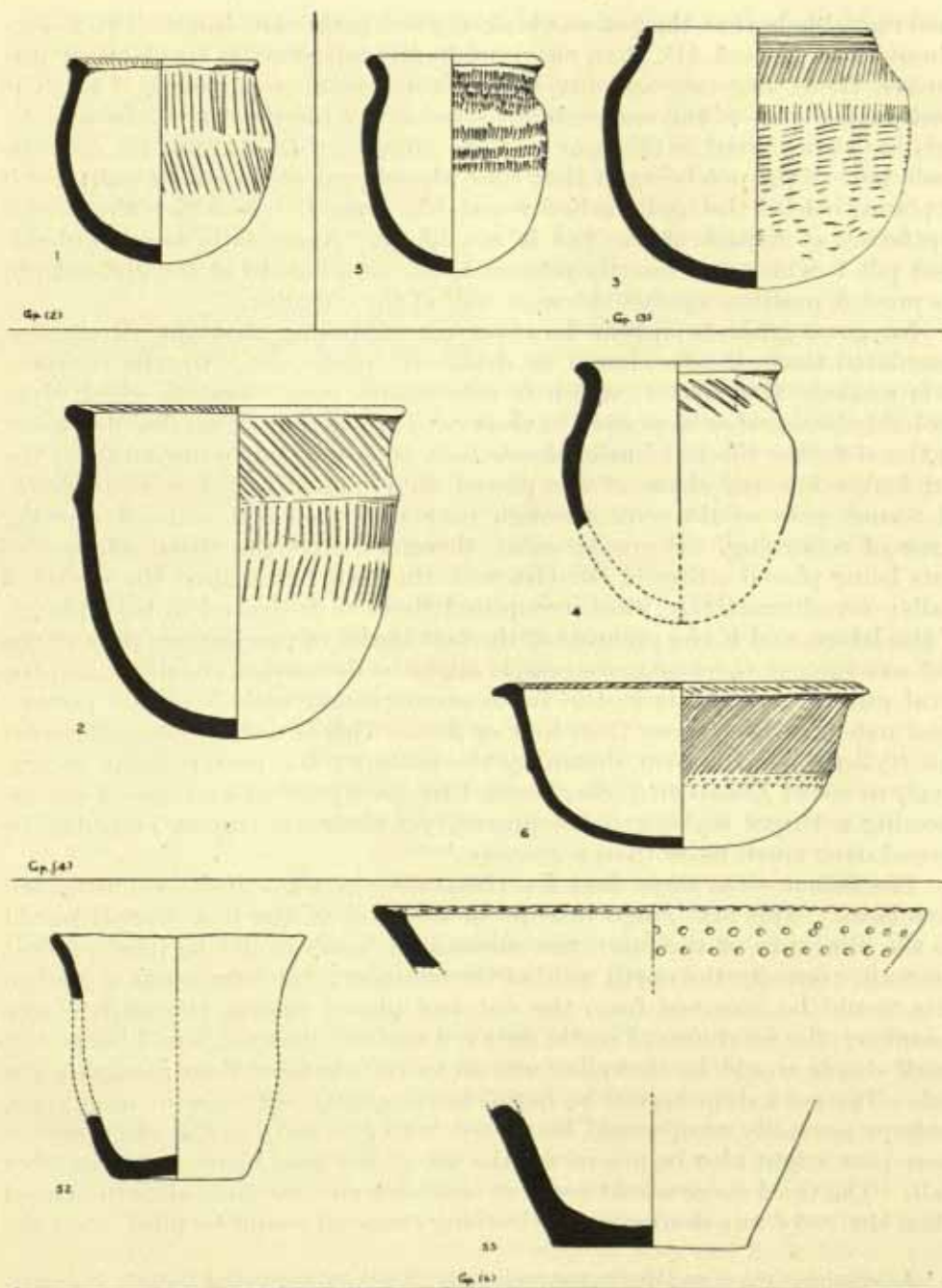


Fig. 7. Reconstruction of Funerary Pottery.

deal more likely that the pot was broken when in the cist, and the two halves removed to 1A and 1B, than that, originally deposited at (say) 1B, it was broken there into two and one-half systematically removed to 1A. The best explanation of the scattering of some of the sherds of pot 2 in area A1 is that this occurred in the course of shovelling out debris from the cist, the main part of the pot being at that time placed against the north wall; for it is placed behind the undisturbed vessel 4 in a position in which the chance scattering of a part of the pot is not likely. Again it is more probable that pot 7, which was heavily reburied, was so reburied in the cist than in its present position against the west wall of the chamber.

No good grounds appear however for supposing that the ritual contemplated that all pots should be deposited in the cist. On the contrary it is unlikely that pot 5, which is intact, and pots 4 and 6, which were probably intact when deposited in their present positions, were first deposited in the cist; for the last burial shows that pots were not removed from the cist before burning charcoal was placed there, and it is not at all probable that such pots would come through both unbroken and without showing signs of reburial. It would seem, therefore, that the ritual allowed of pots being placed either in the cist with the body, or against the chamber walls; or, alternatively, that it required them to be placed in both places. If the latter, and if the practice of the last burial of placing two pots in the cist was typical, three or more vessels might be devoted to the dead, and the total number of burials in the tomb accompanied with Neolithic pottery need not have been more than four or five. This is not incompatible with the stylistic development shown by the pottery: the pottery kilns successively in use at Eilean an Tighe, North Uist, have produced a series of vessels showing a longer stylistic development, yet their use cannot plausibly be spread over much more than a century.¹

The Ritual.—On these data the ritual may be tentatively reconstructed as follows. The first stage (except in the case of the first burial) would be the clearance of the cist: the substantial bones would be piled against the wall, normally the north wall, of the chamber; the large parts of broken pots would be removed from the cist and placed against the walls of the chamber; the residuum of earth, decayed matter, charcoal, small bones and small sherds would be shovelled out on to the chamber floor alongside the cist. The next stage would be burial in the empty cist: one or more pots, perhaps normally two, would be placed with the body in the cist; one or more pots might also be placed for the use of the dead against the chamber wall. The third stage would occur at some determinate time after the burial when the body was decomposed: burning charcoal would be piled upon the

¹ A preliminary report on this site was made to the Royal Anthropological Institute in January 1939, and a brief note on this is in *Man*, March 1939. A verbal report was made to the Society in February 1949.

cist to drive the now disembodied ghost from the tomb; sherds, and perhaps bones also, might be taken away as amulets.

The Later Burials.—The ritual which it has been attempted to reconstruct above continued in use throughout the period of use of Neolithic pottery; pot 9, which is stratigraphically one of the earliest in the tomb, had been deposited in the cist, and pots 10 and 11 had accompanied the body last deposited there. During this period, and during the time that occurred before any later burial was made, earth had silted through the roof, and debris had accumulated, to a depth of generally 12 inches above the floor, while the cist had silted to the brim. The overlying stratum (5) was composed of brown earth, free of charcoal or other signs of burning, and no traces of bones were preserved. Over the middle of the cist and 8 inches above the floor, pressed down into its loose filling by the great weight of the fallen roofing slab, of which the edge lay upon it, was the Rinyo II type pot 53. Against the north wall at 15 inches above the floor, and separated from the highest Neolithic pot by 3 inches of accumulated deposit, was the Beaker type pot 52, which is stratigraphically the latest in the tomb. In the eastern part of the chamber at 12 inches above the floor was the pumice pendant in the shape of a flat axe shown in Pl. IX, 4.

Clearly a change had taken place in the ritual. The cist was no longer used; fire was no longer brought into the tomb; and bodies were laid on the level floor of the silted-up chamber, accompanied apparently by a single vessel. Assuming the pendant to have been hung from the neck, the burial it accompanied was laid with the head to the east. Since at this stage the level of the floor of the antechamber was certainly too high to allow a corpse to be brought in through the door, the body must have been introduced by removing part of the roof. Entry could be obtained either by lifting off the capstone of the corbelled vault or by removing a sector of the vaulting; neither process need disturb the vault's stability, and many corbelled vaults stand incomplete to-day. In entering the chamber and lifting down a heavy body a good many slabs might however get displaced, and the quantity of fallen slabs at the base of stratum 5 may reflect such efforts.

The Time Order of Deposition.—In the schedule on pp. 16-18 the pots are arranged in groups believed, on a balance of probabilities, to represent the time order of deposition, and the data available for forming a judgment are set down. Only an incomplete, and manifestly tentative, assignment to successive burials is possible. Pots 13 and 9 (Group i) may with some probability be assigned to the first burial, pots 8 and 1 (Group ii) to the second. The second pot in each of these two groups had probably been originally in the cist, while the first pot may or may not have been; either burial may have been accompanied by a pot or pots placed against the chamber wall, but there is no sufficient evidence to identify these. Pots

11 and 10 (Group v) accompanied in the cist the last burial made there. The pots in Groups iii and iv are likely to have belonged to intermediate burials, though, of those that were originally deposited against the walls, pot 5 may have been an accessory vessel belonging to an earlier burial, and pots 4 and 6 accessory to the last burial. Owing to the accident already described the position of pot 51 relative to pot 7 is unknown, and it may be that it should be attributed to an intermediate burial or that it was an accessory vessel deposited against the west wall with the last burial in the cist. If we relied on accepted stylistic grounds it would be natural to attribute it to a burial after Neolithic pottery had gone out of use; but such grounds are unsafe, and the small depth of deposit in the vicinity of the orthostat C5 below the sealing burnt-layer in the upper part of stratum 12 makes it questionable to allot it to a group other than Group iv with pot 7.

Food Deposits.—There were no surviving animal bones, but scrapings from the interior of two pots, one from the Neolithic pot 14 and one from the Rinyo II type pot 53, were examined in the British Museum laboratory and were reported probably to be the remains of food.¹

The Pottery.

A schedule of the pottery is given in the preceding section, and the form and decoration of the pots are shown in the illustrations. A descriptive catalogue of the individual vessels would add little or nothing, and a full analysis of the Hebridean pottery sequence can best await the publication of the much larger and more representative series from the kiln site of Eilean an Tighe, where the Unival vessels were probably made. It will suffice here to note briefly the data derivable from the tomb itself.

The Neolithic pottery is thin, hard and well baked, with crushed rock grits, mostly small. It is well formed and smoothed, sometimes highly burnished, but the surface has in part disintegrated. The colour, both on the surfaces and internally, is predominantly grey, but verging into either black or brown. Some sherds which have been reburned are brick-red, and their surface has become dusty and easily rubbed off. A test

¹ I am much indebted to Dr Plenderleith for examining the two samples, on which he reports as follows: "I consider that they are certainly not from cinerary urns owing to the absence of phosphate and of calcium in any quantity, and they are probably therefore the remains of food."

Scrapings from Pot 14.

Colour: black.

Partly organic.

Residue after incineration = 17.12 per cent.

Composition of ash: mostly sand and some iron oxide with traces of alkaline salts. No phosphate or calcium.

Incrustation from Pot 53.

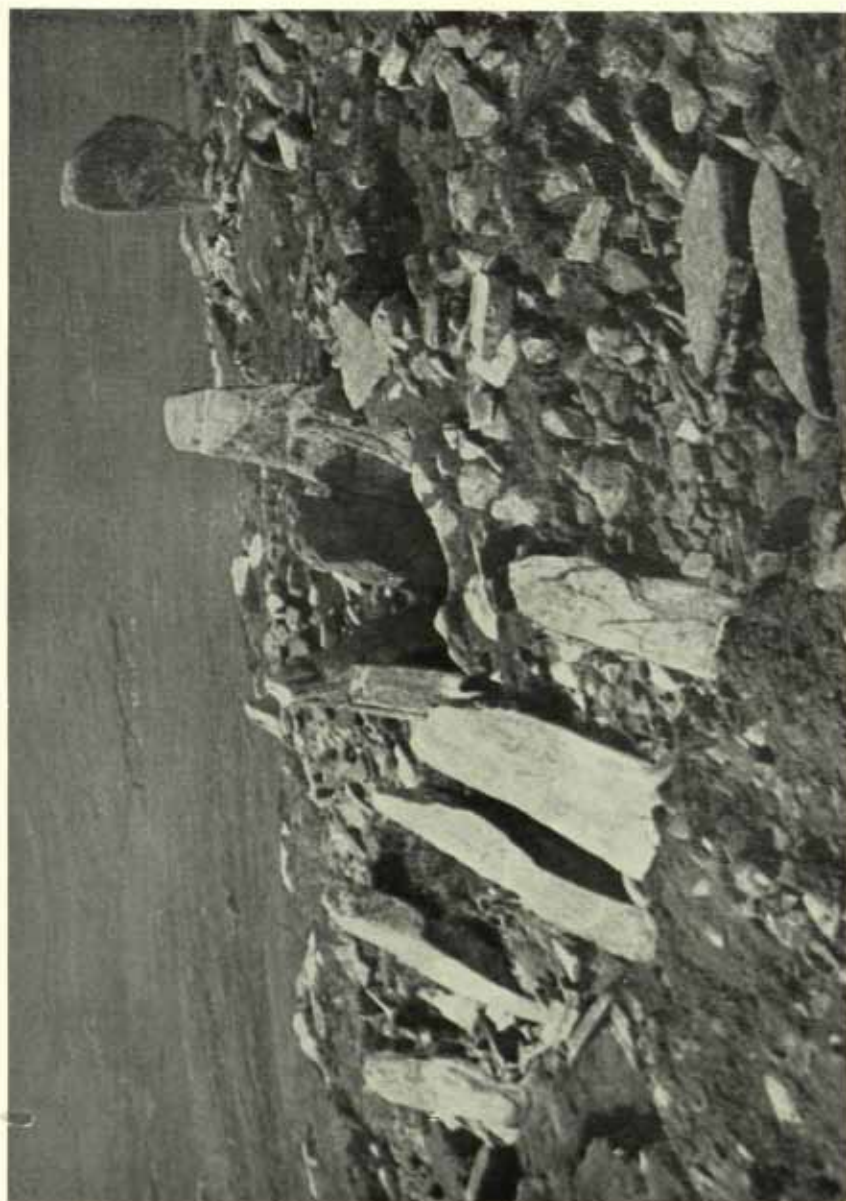
Colour: deep brown.

Partly organic.

Residue after incineration = 20.44 per cent.

Composition of ash: mostly sand and some iron oxide with traces of calcium, sulphate and chloride. No phosphate.

I should say that the sand and iron oxide have come from the pot most likely."



General view of tomb. Excavated chamber in centre; facade partially excavated below;
independent standing stone top right.



1. Iron Age House, looking north.

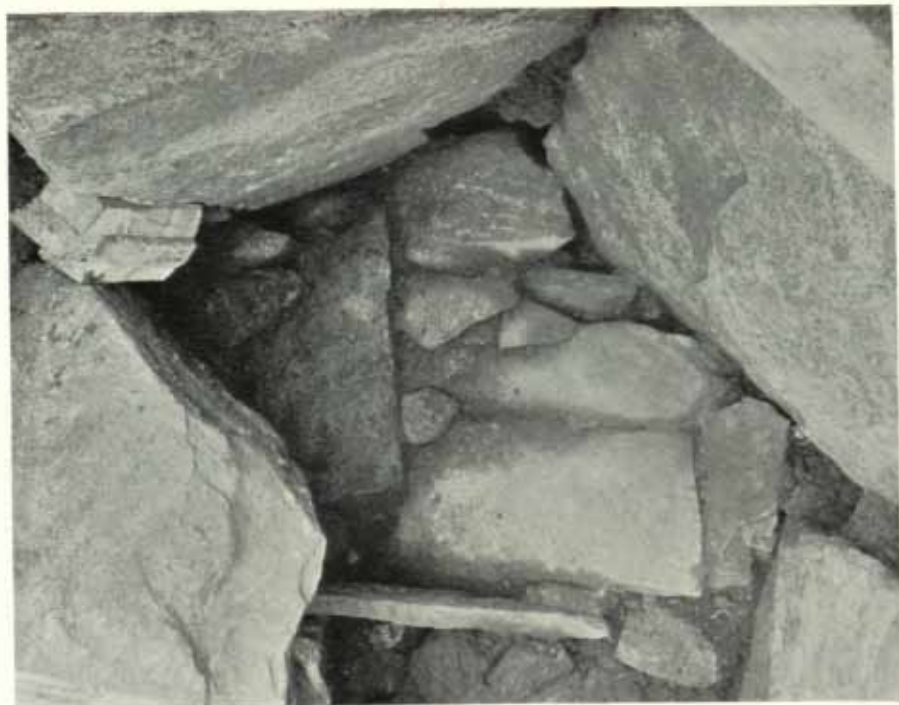


2. Portal of tomb, with part of retaining ramp in right foreground.

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2. Southern end of façade showing triangular gusset block and diagonal walling.



1. Vertical photograph of cist: sloping head slabs in lower part and flat bottom above. The foot slabs of the cist are hidden by the fallen lintel at the top left.



1. Pot 9 ($\frac{1}{2}$).



2. Pot 8 ($\frac{1}{2}$).



3. Pot 1 ($\frac{1}{2}$).



4. Pot 5 ($\frac{1}{2}$).



1. Pot 3 ($\frac{1}{2}$).



2. Pot 12 ($\frac{1}{2}$).

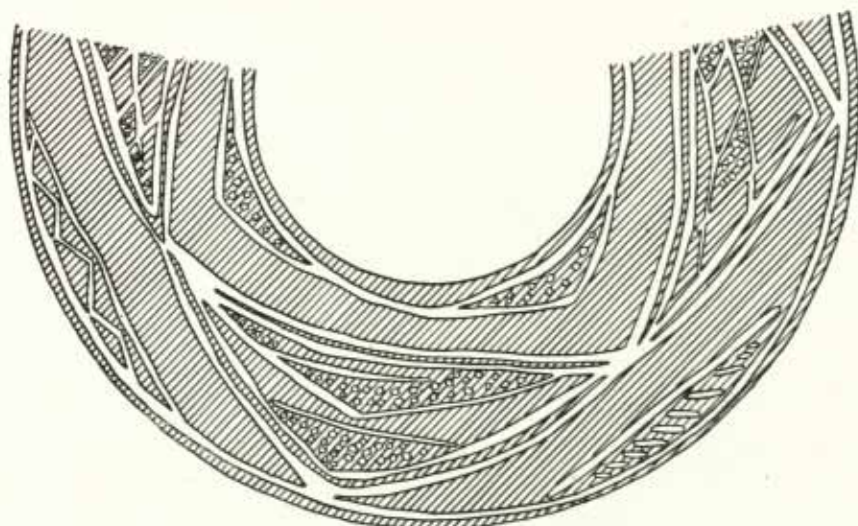


1. Pot 7 ($\frac{1}{2}$).



2. Pot 2 ($\frac{1}{2}$).

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(Upper) Vessel from Unival Chamber Tomb, North Uist. Scale ($\frac{1}{2}$).

(Lower) Development of pattern on above. Scale ($\frac{1}{2}$).

[From *Proc. Prehistoric Society*, 1938.

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1. Pot 4 ($\frac{1}{2}$).



2. Pot 6 ($\frac{1}{2}$).

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1. Pot 11 ($\frac{1}{2}$).



2. Pot 53, rim ($\frac{1}{2}$).



4. Pendant ($\frac{1}{2}$).



3. Pot 10 ($\frac{1}{2}$).

examination by petrological analysis showed the pottery to be of local manufacture.¹

Viewing the Neolithic pots in the order tentatively established in the preceding section of their deposition in the tomb, and in which they are arranged in figs. 6 and 7, the following provisional comments suggest themselves regarding the stylistic development. As regards form, small and relatively narrow globular pots tend to give way to larger and broader pots and to bowls; rim form develops from simple to complex types, including the internal bevel; carination does not occur in the two pots believed to belong to the first burial. As regards ornament, the only plain pot is believed to belong to the first burial (though the fragmentary pot 14 in Group iv may also be plain); decoration is initially, and throughout the whole series predominantly, by grooved lines; decoration by short strokes develops during the series; decoration by circular depressions or dots occurs once only and late in the series; the outlining of decoration by groups of parallel grooves below the rim develops during the series; and, as the rim develops, it becomes a vehicle for decoration. Any deductions from so short a series of pots must however be very tentative and liable to revision when a wider study of the Hebridean pottery sequence has been undertaken, but it may be noted that the general effect of a survey of the Hebridean and the Orkney pottery is to show that in substantial part it derives from a branch of the Western Neolithic family distinct from the South British Windmill Hill branch. Contrasting examples are: pot IC2 from Clettraval, which is typically Windmill Hill; pot 9 from Unival, for the shape of which it is necessary to look to Brittany or beyond,² and the Unstan bowl, for which the prototypes are in Languedoc and Iberia.³

¹ See a note on "Local Manufacture of Neolithic Pottery," *P.S.A.S.*, lxxvi. 130 ff.

² *E.g.* to Manio (*l'Anthropologie*, lxiv, 486, fig. 1).

³ For Hebridean examples of the Unstan bowl derived from the late stage of the Eilean an Tighe kilns see Mrs Hawkes in *Arch. J.*, xcv, pls. IIA and VA (lower); for an example from the Moray Firth see R. B. K. Stevenson in *P.S.A.S.*, lxxx, 142 and pl. xxiv, 2. There is a Languedoc example from the Grotte des Sables, Remoulins, in the Nîmes Museum, unpublished. Comparison with the South Iberian pottery sequence is now possible as a result of Dr Leisner's *Die Megalithgräber der Iberischen Halbinsel*, part I. Following the exhaustive analysis there undertaken, which unfortunately cannot be based on stratigraphy, it appears that, as in the Hebrides, there was a development from narrow and mainly globular pots to more open vessels and hemispherical and shallow bowls. Carinated vessels belong in the main to this later stage, but do not become common except in the Argar Culture, the pottery of which can now be seen to be a development of forms previously current in Southern Iberia. In that culture occurs, though not very commonly, the form with high carination and hollow neck which is characteristic in North-west Britain (*cf.* Leisner, *op. cit.*, pl. 161, line 10, column I). Prof. Pericot has shown this form to be an equally advanced one in Catalonia (*La Civilización Megalítica Catalana*, 40). (This circumstance may have chronological significance, since the Argar Culture can be broadly correlated with the Wessex Culture through the segmented fayence beads of Fuente Alamo, for the substantial identity of which with examples from Wessex see E. T. Leeds, *Homagem a Martins Sarmento*, 402-4.) Also in the later stage, though south-western and unrelated to the Argar Culture, is the shallow dish with upright sides and slightly curved, and later flat, base, which is the analogue of the Unstan bowl. In this dish, and also in the bowls which characterise this later stage, there occurs the development of the rim into thickened forms with flat top and often external or internal bevel, and also into the rolled-over form—of which, it may be noted, there is an example in the Arles Museum,

Of the remaining pots, 52 is apparently a B beaker of rather poor technique and, so far as the surviving parts show, undecorated; the paste is reddish to greyish brown throughout and the fairly well smoothed surface is corky. No B beakers have hitherto been found in the Northern Hebrides. The absence on the Atlantic route of beakers which could plausibly be supposed to have come by that route has been an unresolved antinomy. This example goes a little way to its resolution, since undecorated B beakers are common in Brittany; and some slight further support for an Atlantic route derivation is provided by the restored Cletraval beaker and the fine corded B beakers from habitation sites from Luce Bay to Sanna Bay, Ardnamurchan.¹

The remarkably fine dish 51, which in technique is similar and equal to the best beakers, is clearly related in decoration, and probably in shape, to the group of pots from Rinyo "all found close to virgin soil under the floors of chambers C and D"; as also to the similar groove and dot ornamented Skara Brae ware which Professor Childe there named Class C.² This ware, which at Rinyo preceded the relief decorated wares (Rinyo II), with which occurred a beaker, may best be called Rinyo I ware, and may or may not have been contemporary with the small amount of undecorated Neolithic pottery from the lowest levels of the site. All the pottery from the villages is of much poorer fabric than the Unival dish, though the Rinyo I ware is sometimes thinner than the Rinyo II, but it is to be remembered that, even in the second millennium, Orkney was dependent on peat fuel and that its pottery is generally correspondingly ill-fired.

In the present unresolved chaos of Early Bronze Age cultures it is only possible to catalogue the wider analogues of the Unival dish. Thus there are analogies with Woodhenge ware, and shape as well as decoration can be paralleled at the Lion Point, Clacton, site, though the similarities in decorative technique are less impressive when the pots are compared than they

unpublished, from the Grotte des Fées. In the dishes decoration may occur on the upright side; in the bowls on the flattened rim-top and in a band below the rim. Decoration never becomes common in the South and its more extensive use probably derives from the Tagus Estuary cultures, of which we still know little that is precise. They are not dealt with in Dr Leisner's first volume and his analysis there does not suffice to distinguish the stage of its earliest introduction on the shallow dishes and the bowls. Some indication may be obtained from data enigmatically recorded long ago by Bonsor regarding two neighbouring, and evidently not contemporary, sites at Acebuchal, where the marshy lower reaches of the Guadalquivir begin to give place to limestone uplands suitable for traders and settlers. Each site showed storage pits filled with rubbish, and a comparison of the two seems to show that the shallow dish and the shallow bowl were developed, and the rim forms partly developed, before the introduction occurred, no doubt by water, of the extensive use of decoration in the style of Palmella (*Les Colonies Agricoles de la Vallée du Bétis*, 22, fig. 3 and, respectively, pp. 30-34, 107-8 and 88-90, 116-123). It appears accordingly that there is a broad correspondence between the pottery sequences of South Iberia and of the Hebrides. The Orkney settlement, of which the pottery is dominated by the Unstan bowl, took place after the Hebridean settlement in which that type is late—as it is in Iberia.

¹ *P.S.A.S.*, lxi. 480 ff., figs. 13 and 36; lxviii. 146.

² *P.S.A.S.*, lxxiii. 25, and pl. xxii, A, 1-8; *Skara Brae*, 131, and pl. xlv.

are in drawings.¹ At Claeton this ware preceded A beakers, and at more westerly sites it occurred contemporaneously with Peterborough pottery and with B beakers. Another analogue is the bowl from the deposits at the feet of the stones of the Avebury Avenue, other deposits being B beakers.² The best analogies for the decoration are however provided by the Aldbourn cups deriving from the richly furnished graves of which there is a concentration in Wessex and from which Professor Piggott has sought to deduce a specific Wessex Culture.³ In shape also the dish can be paralleled in these barrows: in one of those at Winterbourne Stoke, and in the Manton barrow which produced the gold-mounted amber disc precisely resembling a disc in a L.M. II tomb at Knossos which must be an import from the British Isles. The Manton barrow can accordingly be dated to about 1450 B.C., and that the whole group of graves is not distant in date from this is confirmed by the number which contained segmented faience beads of a type probably exported from Egypt c. 1400 B.C. The Aldbourn cups and grape cups of the tombs derive from the Chassey type wares of the Breton chamber tombs, habitation sites and Er-Lannic, and one of the chamber tombs is further linked with the Wessex barrows by a faience bead and another by gold sceptre mounts.⁴ The Chassey type wares of Brittany are believed themselves to derive from Languedoc pottery contemporary, or at least overlapping, with the groove-decorated wares which are ancestral to the Neolithic pottery of Unival, and not greatly anteceding beakers and segmented beads of bone and faience. In these circumstances the Unival dish and the analogous Rinyo I ware of the Orkney villages can with reasonable security be attributed to movements along the Atlantic route at a date near the middle of the second millennium. Supporting evidence is provided by the remarkable resemblance of the dish to the Folkton drums, of which the Mediterranean origin is not in doubt and of which the date is fixed earlier than that of a beaker with cordon below the rim.⁵

Pot 53, of which the base and internally bevelled rim might suggest a vessel within the food-vessel type, appears on reconstruction to be flower-pot-shaped. Its coarse fabric is inadequately smoothed by a thick buff slip, which has disappeared from the rim, and its crude decoration is by lines of large circular pits. In shape, rim-form and texture it agrees with a number

¹ *P.P.S.*, 1936, 190, figs. 4, 5-7; cf. pl. xl, 7-10, for an impression of the different character of the tooling employed. The terms "grooved ware" and "channelled ware" are both avoided here as being mutually confusing.

² *P.P.S.*, 1935, 147, and pl. xvi. Professor Piggott has compared this bowl with a group of handled bowls, for which see *P.P.S.*, 1938, 98, fig. 23, and Abercromby, *Bronze Age Pottery*, I, pl. xxii.

³ *P.P.S.*, 1938, 69 ff.; cf. also 115 ff. For a note on the Chronology of the Wessex Culture see Appendix III below.

⁴ For references see Appendix III below.

⁵ *British Museum Bronze Age Guide*, 80 ff. and figs. 74, 5; Abercromby, *op. cit.*, I, pl. xiii, 152; information from Professor Piggott. A stray find from Los Millares (Leisner, *op. cit.*, pl. 155, 3) has a grooved spiral which may be compared with that on the Rinyo I pot from Skara Brae, which site also produced segmental beads of bone.

of the pots from the Orkney villages, but pit decoration is not known there.¹ Such ornament is however common in Woodhenge ware, particularly at the type site, and in that ware the flower-pot and the vertically-sided pot are the two common shapes. That the Skara Brae and Woodhenge wares were related was first demonstrated by Professor Piggott,² and Professor O'Riordain has recently argued that the coarse pottery which succeeds Neolithic A wares at Loch Gur is related to both.³ An examination of the coarse pottery from the Loch Gur site of Knockadoon C shows the rim form to be very uniformly flat-topped or internally bevelled, and, so far as indication can be got from sherds, the shapes to be predominantly vertical-sided or flower-pot-shaped. Decoration however, which is rare, is by grooved or incised lines, either parallel or meeting or crossing one another at an angle, and forming apparently very erratic patterns, and the connection suggested with Woodhenge and Skara Brae wares is correspondingly doubtful. However that may be, we may distinguish a western pottery family characterised by coarse, vertical-sided or flower-pot-shaped vessels decorated with cordon, boss and pit ornament. Ancestors for such a family are to be found in the coarse jars and flower-pots imperfectly known from the Catalan and Languedoc caves,⁴ but providing in their elaborate cordon and boss ornament convincing originals for the Rinyo II ware (Skara Brae A and B) and for early and elaborately decorated encrusted urns⁵; the Aude-Garonne river route through the Carcassonne gap provides the necessary means of transport. Our poor knowledge of the southern material is to some extent supplemented by the material found with beakers in the upper stratum of the Pinnacle site in Jersey; here coarse jars were straight- or barrel-sided with relief decoration in straight or curved finger-tipped cordons, while boss decoration occurred on the Chassey type wares of the lower stratum.⁶ If this south-western source proves to be the true origin of these types, Woodhenge ware would represent the coalescing of the two classes of decoration discussed in this and the preceding paragraph and represented in Orkney by Rinyo I and II respectively.⁷

¹ *P.S.A.S.*, lxxiii. 23, 24, and verbal information from Professor Childe.

² *P.P.S.*, 1936, 201.

³ *P.P.S.*, 1946, 148. This pottery is not yet published, and I am greatly indebted to the courteous facilities extended to me in the National Museum in Dublin for its examination, and to Professor O'Riordain for discussion by letter. The further tentative suggestion of the latter that the ware is related to the Glencrutchery ware of the Isle of Man is not borne out by a comparison of the rim forms—a conclusion which I understand Mr Megaw to share (*P.P.S.*, 1947, 151, fig. 6).

⁴ The best account is to be found in L. Pericot, *Historia de España*, i. 120 ff., and plates.

⁵ The comparison was first made by Professor Childe in 1928 (*P.S.A.S.*, lxiii. 273); see also *Prehistoric Communities*, 88.

⁶ Jacquetta Hawkes, *Archæology of the Channel Islands*, ii. 78 ff. Relief decorated ware occurs in Brittany, at Peu Richard on the Garonne route and at Chassey on the Rhone route, but details of this material are lacking.

⁷ A western origin for this pottery may be the more readily accepted that Professor Piggott's search for an origin in the Low Countries (*P.P.S.*, 1936, 197 ff.) produced so little by way of prototypes for the decoration and no class of vessels combining the shape with the relevant decorative techniques. The

Stone, Pumice and Flint.

The large stone ball already mentioned is about $3\frac{1}{2}$ inches in diameter; it has been shaped by pecking, but has two relatively flat facets which show signs of grinding, and one of these has been battered on a pointed object. Large balls such as this are clearly capable of practical use as hammers, and two have been found in a domestic context at Rinyo and three in the Ronaldsway house.¹ Two were found in the socket in which a façade orthostat had stood at the Cleittraval chamber tomb (and there interpreted as ritual deposits)², and smaller stone balls, which do not suggest practical use, are known from the chambers of Irish tombs.³ If they were deposited ritually it would appear from their locations that they were dedicated as part of the constructional rather than the funerary ritual; but the natural explanation is that the balls were building tools left on the site as objects unsafe to remove.

The pumice pendant, which is broken at the perforation, appears to belong to the family of axe pendants, or perhaps rather, from the direction of their perforation, adze pendants, which is widely distributed in Europe from the Central Mediterranean to Brittany. While pendants are known in the Irish passage graves, and spread thence to the Wessex Culture, the only one of the axe type hitherto recorded for the British Isles is that from the small gallery of Harristown, Co. Waterford, where it accompanied a primary cremation.⁴ This specimen, like almost all the Continental ones, imitates a stone axe or adze, although it, and most of the European examples, must have been made when metal tools were locally known, if not locally made. The only pendant that it has been possible to trace which imitates a metal type is an exact parallel to the Unival one; it is in the British Museum, and derives from Lukis's excavation of the long port-holed gallery of Kerlescan, near Carnac, a tomb which produced a handled Bronze Age pot, a beaker and a shallow bowl with groups of vertical applied ribs.⁵

A pumice pendant was found with Early Bronze Age pottery in a passage grave in St Mary's, Seilly, by Bonsor, who told Dr Hencken that he had found pumice also in chamber tombs in Southern Spain; it is in the British Museum, and is a small rounded lump pierced near one end. A similar pierced lump was found with 35 stone disc beads above floor level in the passage to the upper chamber of the two-storied tomb of Taversoe Tuick,

general distribution of the ware is westerly, and the Clacton site not really anomalous in that it is on a sea route. Specimens have recently been identified from Glenluce, including one strikingly Iberian one (R. B. K. Stevenson, *P.S.A.S.*, lxxx. 143).

¹ *P.S.A.S.*, lxxiii. 27; *P.P.S.*, 1947, 152.

² *P.S.A.S.*, lxix. p. 531. Reference is there made to another ball found outside the peristalith of an Anglesey tomb.

³ Carn H. and Carn K. at Carrowkeel (R. A. S. Macalister, *P.R.I.A.*, xxix. C, p. 311).

⁴ Jacquetta Hawkes, *J.R.S.A.I.*, lxxi. 1941, p. 130 ff.

⁵ *Journ. Brit. Arch. Assoc.*, xxiv. 1868; Z. le Rouzic, *L'Anthropologie*, 1932, p. 246.

Rousay, Orkney. There is a long tradition of using pumice in the Hebrides, and the Unival pendant is likely to be of local manufacture. Lumps are still picked up on the shores for domestic use; it is common on Iron Age habitation sites; a lump used as a rubber was found at a low level in the chamber of the Cleittraval tomb, and a number of lumps in the beaker level of the chamber tomb of Rudh' an Dunain, Skye. Geological examination of the Rudh' an Dunain specimens showed the material to be of West Indian origin.¹

If the Unival pendant was worn round the neck, the body must have been laid with head to the entrance of the chamber, and was probably accompanied either by pot 52 or by pot 53. Since it imitates a flat axe or adze, it shows that metal tools were known in the Hebrides at latest when the later of these two pots, that is the beaker, was deposited. Two beaker burials in Mull were furnished with metal, one having a riveted knife-dagger, but none such is known in the Northern Hebrides; indeed the only early bronze from any source in the islands is a flat axe said to have been found in Glen Drynoch in Skye.

From the funerary levels in the chamber came two struck flakes of flint and nine probably struck flakes of quartz.²

Structural Features of the Tomb.

It is not proposed to add here to the literature of the typology of chamber tombs; indeed the moral which may be drawn is rather that to divorce the structure of tombs from their contents, and to study their structural typology in isolation, is to be deprecated as a source of error. For Unival is a tomb showing analogies to Cleittraval in technique of construction, in design and in ritual such as to argue strongly that both were constructed and used by the same social group and at nearly the same time; yet, regarded typologically, one could be described as a passage grave in a short cairn and the other as a Clyde type segmented gallery in a long cairn. Nor can this antinomy be resolved by classifying the Hebrides as an area of mixed culture unless it can first be proved, as has not yet been done,³ that passage graves and segmented galleries are really elements belonging to separate cultures.

In point of constructional technique the chamber ("Section I") of Cleittraval resembles that of Unival in that both are built of orthostats tilted slightly backward against the cairn material behind them, their feet not being sunk into the earth; in contrast the remaining sections of Cleittraval

¹ *P.S.A.S.*, lxvi. pp. 209-210. For a piece of pumice from the sandhill site of Dundrum, accompanied by pottery which Professor Estyn Evans thinks to approximate in date to the Rudh' an Dunain beaker, see *U.J.A.*, 1942, p. 12.

² I am indebted to Dr Charles McBurney for advice upon the quartz material.

³ See in this regard Professor Childe's recent remarks in *Scotland before the Scots*, 98.

are built of orthostats tilted inward and supported by septal slabs. The façades of both tombs are built of orthostats tilted backward against the cairn, supported behind by built abutments and wedging slabs, and secured in front by blocks wedged between themselves and a tight paving of horizontally set slabs.¹ In point of design both tombs have an abnormal type of straight façade, slightly bowed out in the centre, and in both the peristalith follows a wedge-shaped plan, though at Clettraval the wedge is long and at Unival short. Both tombs have a cist in the south-west corner of the chamber and, in the light of the Unival evidence, this points to an identity in funerary ritual which is even more significant than the similarity in design. On the evidence of the pottery the tombs cannot be distant from one another in date.

There is one feature which Unival shares with Clettraval which calls for some further consideration. In each tomb the cairn is shallow, not covering the chamber or the peristalith, and it does not extend, except as a low retaining bank, beyond the peristalith. In each tomb moreover it is a more or less level platform, and banked up on the lower side of the site to make it so. This characteristic is probably shared by many other chamber tombs, and it points to the need to recognise that differences are as much to be expected in type of cairn as in shape of chamber. The older assumption that a substantial covering mound was of the essence of a chamber tomb sprung from the conception that these tombs were necessarily related to the earthen (unchambered) long barrow of Southern and Eastern England, which may be of quite different cultural origin.

In fact several sorts of cairn are to be recognised. There is first the artificial hill, itself plainly an object of ritual significance, which is most splendidly seen at New Grange. Even in these it is not to be assumed that the hill as it originally appeared was without feature, whether a visible façade and peristalith, or an outer ring of free-standing monoliths, and at Rudh' an Dunain chamber tomb in Skye it was possible to show that the conspicuous cairn had left visible the top, and probably the greater part, of the façade and peristalith.² Cairns which are artificial hills are not typical in the Mediterranean.³ There are next those types of cairn which are architecturally planned: the stepped cairn, built in terraces each with

¹ In the report on Clettraval the paving, shown on the plan, was not interpreted as a structural requirement but as a path along the length of the façade. In the light of the much less wrecked façade at Unival it should certainly be regarded as structural.

² *P.S.A.S.*, lxviii. 199, and pl. ii.

³ Generalisation is difficult, but it would seem that in the Mediterranean the built tomb, like the rock-cut tomb, was typically excavated in a natural hill or cut down into a level ground surface, the overlying mound, if any, being the upcast from the excavation. Some Mycenaean *tholoi* (listed by Professor Childe, *Dawn*, 75 and fig. 39) had artificial mounds, if not very substantial ones, and in Malaga the great mound over the corbelled tomb of Romeral at Antequera is claimed by Dr Leisner to be artificial (*op. cit.*, 174), though Mr W. J. Hemp thought it almost certainly natural (*Ant. J.*, xiv, 410). There is no doubt that other of the large tombs of Southern Iberia, as many of the smaller ones, were excavated in the natural soil and had only slight mounds, if any.

a retaining wall, as at Wideford Hill, Orkney¹; and the cairn which is a skin following the outline of the chamber, as in the Rousay tombs.² These have Mediterranean prototypes, the former at Los Millares in Almeria and at Arles in Provence³; the latter in the Sardinian giants' tombs and the Minorcan *navetas*. There are finally those shallow cairns in the nature of a platform around the exposed chamber which find a prototype in the shallow mound, presumably no more than the spread of the upcast, which overlie those Mediterranean rock-cut tombs which are on level sites.⁴ There is a *prima facie* case for supposing that such cairns were widespread in North-west Europe in the fact that an immense number of chamber tombs have no substantial surviving mound; and Hebridean examples in which the feature can be demonstrated include not only Unival and Cletraval but also the tomb within the stone circle of Callernish in Lewis.⁵

It may be noted that it is no long step from these shallow cairns to the platform of boulders less than 2 feet in height within a megalithic kerb which constituted the cairn in the Neolithic enclosure at Lyles Hill, Belfast, a cairn which Professor Estyn Evans compares to the boulder platforms filling the forecourts of Ulster horned tombs⁶; nor to the boulder platform 1 foot 6 inches in height within the bank and orthostats of Stone Circle B at Loch Gur in Limerick.⁷

Ritual.

The most important aspect of these excavations is the ritual which they seem to disclose and the resemblances of this to Aegean ritual. The latter is best known to us from the sixteenth century onwards in the cemetery of rock-cut tombs at Mycenae, from which Professor Wace had deduced a comprehensive formulation of the ritual observed.⁸ Professor Wace's account will mainly be followed, but will be compared with the evidence from the chamber tombs of Crete, which commence slightly earlier, and with that from the still earlier cemetery of Vounous in Cyprus.⁹ Practice naturally varied, not only with time and place, but also between contemporary tombs in the same cemetery; nevertheless there is a large common element for comparison with the Unival ritual.

¹ *R.C.A.M., Orkney*, No. 410. Petrie recognised this a century ago (*Arch.*, xxxiv. 124 ff.).

² *R.C.A.M., Orkney*, No. 573 ff.

³ G. Leisner, *op. cit.*, pl. 85; W. J. Hemp, *Arch.*, lxxiii. 150.

⁴ Oddly it has not been supposed that these tombs originally had great mounds, and the position of such a tomb as the Grotte des Fées at Arles is a guarantee that its slight mound has never been robbed.

⁵ *R.C.A.M., Outer Hebrides*, No. 89. The tomb is an integral, or at least an integrated, part of the monument, and its relation to the stone setting shows it never to have had a substantial mound.

⁶ *Quarterly Notes of the Belfast Museum*, March 1940, 4 ff.

⁷ *P.P.S.*, 1946, 157.

⁸ *Arch.*, lxxxii. 121 ff. Cf. also Perron, *The Royal Tombs at Dendera*.

⁹ A. Evans, *Arch.*, lix. and lxxv. (for the Zafer Papoura and Isopata cemeteries at Knossos); E. J. Forsdyke, *B.S.A.*, xxviii. 243 ff. (for the Mavro Spelio cemetery at Knossos); P. Dikalos, *Arch.*, lxxxviii. 1 ff. (for the Vounous cemetery in Cyprus).

Thus burial commonly took place in a specified part of the chamber. Sometimes this was a pit, which might be roofed, sometimes an alcove, sometimes a platform slightly raised from the floor, sometimes an area separated by a rock ridge from the rest of the chamber; commonly in Crete, but rarely on the mainland, a self-standing cist coffin of clay was used. The corpse was clothed and decorated with its ornaments, and was sometimes provided with its weapons or implements and regularly with a number of pots. The latter might be placed on the body, sometimes in the hand; or might be placed in a specified part of the chamber other than that reserved for the body, normally against the opposite wall. In Cyprus at least the pots might contain meat. The body was laid with the head slightly raised. The door of the tomb was walled up by the attendants as they left the chamber, and they may have poured a libation outside the closed door and broken the cup.

At some time before a second burial the door blocking was removed either in whole or as regards its upper part. Space for the second burial may sometimes have been found on the chamber floor beside the first burial, but commonly the earlier body was removed. Removal was sometimes effected with care to a pit in the dromos, or occasionally to a pit in the chamber floor, where the bones were packed in with sherds from pots of which the remaining parts survive on the chamber floor. Very frequently however the bones were piled up at the side of the chamber with the associated pots, or parts of them. Occasionally bones and sherds were merely thrown out into the dromos, in which process fragments might be dropped among the stones of the only partially removed door blocking. Grave goods were also deliberately removed from the tomb and taken away by the family. In some cases an earlier burial might be found covered with infiltrated silt, or soft rock fallen from the roof, and might not be removed; in some cases the body was perhaps deliberately covered with earth brought into the tomb. In these cases the later burial might be made at the resulting higher level, with the result that stratified burials are found; such seem to have occurred when the tomb remained in use for a long period (two or three centuries) and the number of burials was large (fifteen to twenty-one). At some stage, which Professor Wace assumes to be on the opening of the tomb for the later burial, the chamber was "purified" with charcoal and incense burned on a brazier or on an incense burner, and burning charcoal might be carried into the tomb in long-handled scoops. In one case only, at Mycenæ, fire was laid on the chamber floor.

It will be seen that in this last respect the ritual differs from that inferred at Unival, where there was evidence that the bringing of charcoal into the tomb occurred at a determinate stage after a burial and not as a preliminary to a further burial. This exception may not be a real one. At the Tomb of the Double Axes at Knossos, in which there was only one burial, the upper

part of the original door blocking had been removed and later carefully rebuilt, presumably on the occasion of some ceremony performed in the chamber by the family, and a charcoal burner, not quite complete, was found in the tomb. In Tomb 518 at Mycenæ the presence of lamps, and other evidence, suggested to Professor Wace the possibility that at a stated time after the burial the relatives visited the tomb for the performance of rites connected with the dead. Moreover a number of the braziers and incense burners in the tombs have been found complete, thus pointing to their having been used in connection with the last burial in the tomb; in the L.M. 1 tomb at Isopata near Knossos (Tomb 5), in which only one skeleton was found, a complete brazier full of charcoal was found behind the head, the body lying between the brazier and the door. Accordingly, if we are correct in the inference made regarding the practice at Unival, there is no need to regard this as necessarily a departure from Mediterranean tradition.¹

Reviewing the preceding evidence, there would seem to be ample ground for concluding that the Unival ritual derived from that of the Aegean area; and indeed, considering the distance over which the ritual had travelled, that the identity is remarkably close. The distance is spanned by many tombs having points of structural resemblance to those of the East Mediterranean but, so far as the writer knows, none of those excavated in Western Europe has yielded detailed evidence of the ritual observed; we merely know broadly that the tombs were used for successive inhumations accompanied by ornaments, personal equipment and pots, that earlier burials were removed to make way for later ones, and that fire was in some form introduced into the tomb.² In respect of this latter practice we have some more detailed evidence from Jersey, where vase supports in the tomb of La Hougue Bie show unmistakable marks of burning on their saucer-shaped tops, and presumably carried burning charcoal.³

Some light is thrown upon the distinction suggested above between the

¹ Other areas in which the cult of the dead is highly developed provide evidence of the mortuary ritual continuing for a considerable period after the death. For instance, in China there were five sacrifices to the dead, the last occurring in the 27th month. After this family mourning ceased, but sacrifice was still made yearly on the anniversary of the death. These sacrifices were made, in the richer classes, at the altar in front of the grave mound. If it occurred that after death the soul regained possession of its body, and thus of human strength, it became a vampire dangerous to the living and drastic steps were taken—burning, frying, or beating the disinterred corpse—to drive the soul from the body (De Groot, *Religion of the Chinese*, 69-80).

² As of course in many tombs in the British Isles. For evidence of the piling up of bones by the chamber wall, reference may be made in particular to the Lanhill chamber *infra*, to Bryce's observations in the Clachaig and Torlin tombs in Arran (*P.S.A.S.*, xxxvi. 88), and to the evidence from the Rousay tombs summarised in *R.C.A.M.*, *Orkney and Shetland*, i. 19. For cists in the chamber, *cf.* for Scotland, *P.S.A.S.*, lxxix. 526, and for Ireland, Carn B at Carrowkeel (*P.R.I.A.*, C. 311). For the piling up of bones and the use of cists in Scandinavia, see C. A. Nordman, *Megalithic Tombs of Northern Europe*, 28. The best evidence for Iberia is from the Dolmen da Soto, Huelva (piling of bones) and Tomb G, Gandul, Seville (piling of pots), for which see Leisner, *op. cit.*, 225 and 205.

³ Jacquetta Hawkes, *The Archaeology of the Channel Islands*, ii. 75 and 202.

earlier and later rituals at Unival by those Ægean tombs already mentioned in which many burials were made over a long period, and the later burials merely laid on the silted-up floor of the chamber above the remains of earlier ones. For the East Mediterranean tombs are commonly, and probably rightly, regarded as family sepulchres, and the later burials in question (accompanied by later types of pottery) must be assumed to have been interred according to a ritual which is no more than a degeneration of that followed in the earlier burials. It is likely that the same is true of the later burials at Unival, and that the distinction between the two rituals there is the result of changes brought about in the culture by the passage of time, and not of the introduction into the Hebrides of a radically new culture. This accords with the consideration that it is inherently improbable that a radical change in culture could be compatible with the continuance of burial in the same tomb.

It has been mentioned that the later burials at Unival must have been effected by removing a part of the roof of the chamber, and it is likely that this practice was more common than has been suspected. At Alapraia a rock-cut tomb was provided with a hole in the roof through which the later burials in the chamber were made, and others of the rock-cut tombs of the Tagus estuary were probably similarly provided.¹ The tiny Lanhill chamber, which contained the piled-up remains of seven earlier burials and an eighth intact skeleton, would have been more easily entered by the funeral party as the excavators entered it, namely, by the removal of a broken piece of the capstone; and we may believe that they in fact did so, despite the experimental success achieved by Mr Keiller and Professor Piggott in manipulating a dummy corpse through a model of the extremely exiguous porthole entrance of the chamber.² In the light of Ægean precedent such a method of entry must be regarded as a degeneration in funerary ritual, and at Unival there is no ground for supposing that it was adopted so long as burial in the cist in accordance with the earlier ritual was still practised. It may however have been in fairly common use in Western Europe wherever porthole or other exiguous openings occur, for these seem much less well designed for the carrying of the dead into the tomb than for preventing the ghost from following the attendants as they left the chamber. That similar devices have been held effective for such a purpose is amply evidenced by modern examples.

Dating.

It is perilous at the present time to offer any comments on the dating of a chamber tomb. It seems right to point out, however, that the ritual identity argued above with Ægean practice is with tombs of which the

¹ E. Jalhay and A. do Paço, *A Gruta II da Necropole de Alapraia*, *Anais* iv. (Lisbon, 1941), 112 and 137.

² *P.P.S.*, 1938, 124 ff.

greater number are not earlier than the sixteenth, or at any rate the seventeenth, century B.C.; and that, if the argument from identity of ritual is held to have weight, it would be difficult to date Unival to any earlier period. It will be recollected that a mid-second millennium date has been inferred for pot 51 and its Wessex and Orkney analogues on grounds of just such contacts with the Ægean as are implied by the identity of ritual. The number of burials preceding that with pot 51 was not such as to suggest use of the tomb for more than perhaps a century, and the sequence of development shown in the Neolithic pottery has been argued from the Eilean an Tighe evidence to be unlikely to have been spread over any longer period. Nor does the sequence at Rinyo suggest any substantially greater time span, for there at the lowest levels there was plain Neolithic pottery and Rinyo I ware of the type of pot 51 (whether contemporaneously or successively was not evidenced), and these were followed by relief decorated wares (Rinyo II) and by a beaker, while the whole life of this tiny settlement cannot with likelihood be stretched over more than two, or at the most three, centuries.

If such conclusions were permissible many antinomies would be resolved, both old and more recent: for example, the structural analogies between tholos tombs in North-west Europe and those in the Ægean; the identity of pendants from Irish passage graves with pendants from "Wessex Culture" tombs; the primacy of cremation in Irish horned cairns, and of cremation and food-vessels in other Irish chamber tombs; the occurrence in Breton chamber tombs of vase supports related to "Wessex Culture" pottery, and in one such tomb of segmented faience beads; the Bygholm find in a pot of earliest passage grave type of a copper hoard containing a dagger with mid-rib on one face which is similar in form to, and almost identical in chemical composition with, one from a corbelled tomb at Alcala in Algarve.¹ All this would become clearer if the chamber tombs were an incident of a brief civilised period in the history of a barbarous North-west Europe: an episode in which Mediterranean merchants, or their semi-Mediterraneanised trade correspondents, established trading settlements on the islands and promontories of the Atlantic coasts to organise the supply by the natives of their copper, gold, callais, greenstone and amber; and from these settlements diffused in Britain a changing succession of pottery styles, which displaced the crude native Windmill Hill pottery and developed into the local wares of Beacharra and Unstan, of Rinyo and Skara Brae, and the early types of incense cup and food-vessel.² All this would be clearer; but we

¹ These recent chemical analyses are noted by Professor Childe in *Institute of Archaeology, Fourth Report*, 1948, 57. For the not less critical Gilchorn find see Appendix III below.

² In dating Windmill Hill pottery, however, account must now be taken of the fact that the supposedly equally early Cortaillod I pottery has been shown to be decorated with patterns cut out in birch bark and stuck on with pitch (see Dr E. Vogt's forthcoming paper in *P.P.S.*, 1949). These patterns are strikingly like patterns from Villafraati and Anghelu Ruju.

should have to abandon more than we have yet abandoned of the traditional March of the Ages, each Age in turn moving uniformly forward over a broad front in space and through a long sweep in time—Neolithic and chamber tombs, Early Bronze and beakers, Middle Bronze and food-vessels—and the readjustment would not be easy.

APPENDIX I.

REPORT ON HUMAN REMAINS. By Prof. A. E. J. CAVE,
St. Bartholomew's Hospital Medical School.

These remains are extremely fragmentary, brittle, and much calcined, and have, in many instances, suffered distortion from fire heat. Only a limited number of the very numerous fragments can be unquestionably identified as human remains; the humanity of many others is merely inferred from their association, though doubtless correctly. With the possible exception of some rib fragments (reserved for Dr Jackson's opinion) no obvious animal bones occur in the material. Should certain of these rib pieces prove not to be animal, then they must represent another and younger individual than the one forming the main content of this tomb. (*Note*.—Dr Wilfred Jackson confirmed in subsequent correspondence that these bones were not animal but belonging to a young human individual, and Dr Cave put the age at under twenty-one.—L. S.)

- B. 0. Impossible to determine: some burnt fragments of human skull.
- B. 1. All burnt, fissured and distorted, fragments of vertebræ, ribs, skull, scapula.
- B. 2. Fragments—impossible of identification.
- B. 3 (1, 2, 3). See below.
- B. 3 (4). Indeterminate fragment.
- B. 3 (5). Rib fragment. ? human, ? animal.
- B. 3 (6). Indeterminate fragments.
- B. 4. A presumably human chip of bone.
- B. 5. Long bone chip. ? human, ? animal.
- B. 3 (1, 2, 3). All part of one and same individual, hopelessly disintegrated. Female, adult, over twenty-five years of age. Of small stature and delicate build. Mandible with square-cut and tall ascending ramus, pointed chin; face probably straight or nearly so. Skull thick, and *probably* round in contour. No evidence of ante-mortem disease or injury.

Parts recognisable: cranial vault, mandibular and maxillary fragments, cervical and dorso-lumbar vertebræ, part of scapula, cranial base (occiput,

petrous temporals, sphenoid), malar bone, first ribs and parts of many others, metacarpals, carpals, chip of astragalus.

All bones much calcined. Charcoal admixed. (*Note*.—Dr Cave confirmed verbally that the degree of calcination was not consistent with cremation.—L. S.)

APPENDIX II.

Classification of Finds.

Position is indicated by rectangular co-ordinates as shown upon the drawings, the plane $z=0$ being 21 feet 3 inches below the top of the tall western orthostat in the chamber (C4). In the original excavations, however, a plane 20 feet above this was used, and a white paint line marked upon C4 where this cut the orthostat. Vertical measurements were made downwards from this plane, and accordingly the vertical positions marked upon all finds require to be subtracted from 20 feet to bring them into correspondence with the vertical positions indicated in this report.

The orthostats are marked F1, F2, and so on, and intervening panels of masonry are referred to as F1-2, F2-3, and so on. The finds are normally classified by area and stratum. The areas in the chamber are shown in fig. 5; those in the excavated parts exterior to the façade and peristalith are identified by the orthostat or intervening panel of masonry opposite to which (in a line at right angles to its face) they lay; the parts excavated within the façade and peristalith were the house, which is referred to as Area H, and the storehouse, in which there were no finds. The strata are: 0, $z=0-1$; 1, $z=1-2$; and so on. Thus A1, 0 indicates a position in Area A1 and Stratum 0.

APPENDIX III.

Chronology of the Wessex Culture.

Since Professor Piggott published his famous paper on the Early Bronze Age in Wessex¹ a number of studies have appeared, but it has been generally accepted that the group of barrows which were then identified provide a fixed point, and indeed the only fixed point, in the history of the second millennium in Britain. In the paper the assemblage of funerary gifts was traced to its multifarious sources: amber and battle-axes to the Baltic; pins of Aunjeticz types, and perhaps amber and shale cups, to Central Europe; crescentic necklaces and cushion mace-heads to the food-vessel culture of Northern Britain; gold ornaments to Ireland; and to Brittany.

¹ *P.P.S.*, 1938, 52 ff.

not only square-tanged arrow-heads and grooved and midrib daggers of ultimate Mediterranean origin—two with gold-studded hafts—but also grape cups, Aldbourne cups of vase support derivation, and four more or less close imitations of vase supports themselves. In addition there were many segmented faience beads, such as occur widely, though more often in bone or shell (encrinites) than in faience, in Iberia, Languedoc and Brittany; these beads however were judged to be actual Egyptian exports of about 1400.¹ Finally there was the gold-mounted amber disc recently re-studied by Professor Childe and mentioned above; this so closely resembles a disc from a L.M. II tomb at Knossos that the latter must be an actual import from the British Isles.² This must date to about 1450 B.C., and confirms the other less precise evidences assembled in the paper of trade between Britain and the Ægean in the sixteenth and fifteenth centuries.

Professor Piggott attributed this group of tombs to an immigrant aristocracy coming from Brittany, and, despite the possibility suggested by Professor Childe that the movement might be reversed, the pottery seems to provide good ground for assuming some movement of people thence. Whether the immigrants constituted an aristocracy, and whether the barrows constituted a "Wessex Culture", may be more doubtful; the assemblage of grave goods suggests rather that Wessex at this period was a centre of North-west European water-borne trade such as in historic times London was to become. It does not seem to have been noticed that the Bristol and Salisbury Avons were navigable by canoes to the margins of Salisbury Plain, and that primitive trade sought ports on the verge of habitable lands where commercial interchange could take place, and was uninterested in the sea-coast as such. The coasts between Bideford and Mount's Bay are by all reasonable means to be avoided by seamen, and the two Avons—to mention no other rivers—are well placed to meet the requirements of Cross-Channel, Up-Channel, Bristol Channel and Irish Sea trade, and provided excellent port facilities above Bradford and Salisbury. In the absence of pack animals, of which there is no evidence in the second millennium, trade was inevitably canoe-borne and, save by water, it was no more practicable for Wessex to trade in stone axes with Cumberland or North Wales than to trade in bluestone megaliths with Prescelly; the goods would not pay for their freight.³ There is therefore a case for regarding the rich grave goods in the Wessex tombs as a trading phenomenon rather than as in themselves constituting a culture, and this explanation accords

¹ *Arch.*, lxxxv. 203 ff. While these particular beads may be Egyptian exports, the existence of other faience beads which cannot be paralleled in Egypt seems to show that there was a secondary manufacture in Britain, though perhaps at a later date.

² V. G. Childe, *Festschrift für Otto Tschumi*, 70.

³ The minimum price to the customer of a pack-load of goods imported on the human back is the cost of the food consumed by the packman on his journey. Only trinkets of high value can be so imported economically over distances exceeding a few days' journey.

better with the fact that the goods are found, some not less plentifully, on trade routes remote from Wessex.¹

Professor Piggott dates the "Wessex Culture," i.e. the grave goods mentioned above and the barrows—typically bell and disc barrows—in which they are found, to 1700-1400 B.C. The earlier date is adopted to accord with the conventional date of the advent of the beaker cultures c. 1800 B.C., and is accordingly based on no specific evidence²; it is assumed that there were two preceding beaker cultures, marked respectively by B1 and A beakers. It has recently been argued by Dr Stone that the beaker cultures in Wessex were evanescent happenings, representing little more than the passage of nomads moving to the Highland Zone; it is even questioned whether these "ever returned on their tracks."³ Dr Stone is able to point to the scarcity of both B and A beakers in Wessex and, having regard to the known density of population there, his argument has some force. Moreover, south-west of Wessex, where there is substantially no beaker culture, there are "Wessex Culture" phenomena: bell barrows, daggers, shale cups and also segmented beads of bone and faience.⁴ The history of Devon and Cornwall as recorded in structural remains is not different from that of Wessex and there is certainly a case for arguing that, in those regions of Britain dominated by Atlantic route cultures, the beaker users were absorbed without substantially altering the cultures of the pre-existing communities.⁵

¹ For example, on the trade routes available to water transport across Scotland, i.e. Clyde-Forth, Clyde-Tay and the Great Glen, and on trading posts on the approaches to these routes from Ireland. The "dagger graves" with midrib and grooved daggers are listed in Professor Childe's *Scotland before the Scots*, App. VIB; to which add the grave recorded in *P.S.A.S.*, xii, 456. The sites are: Glenluce, near the Mull of Galloway; Blackwater Foot, in Arran; Carluke, on the Clyde above Glasgow; Auchterhouse, near Dundee; and Gilchorn, near Arbroath. It may, moreover, be noted particularly that the dagger from the great Arran cairn had a ribbed pommel-mounting of gold of evidently Irish origin and identical with the mounting of the grooved dagger accompanying a Type E food-vessel in the tomb on Topped Mountain, in Fermanagh. The Gilchorn cairn produced, not only a midrib and a grooved dagger from its central pit (or cist) grave, but also a midrib dagger with unsymmetrical notches for binding to the haft. The notched dagger is a distinctive South Iberian type; it has been found in the Harristown cairn in Co. Waterford (*J.R.S.A.I.*, lxxi, 139, fig. 5) and not elsewhere in the British Isles. The Gilchorn specimen accompanied an overhanging rim urn, and another urn in the cairn was accompanied by an incense cup with characteristically Iberian decoration of continuous lines of zigzags set vertically. The Gilchorn find seems precisely as significant for trade with Spain, and for chronology, as the much discussed Bygholm find mentioned on p. 36 above.

² Cf. App. IX, "Absolute Chronology," in Professor Childe's *Scotland before the Scots*. Regarding the Wessex Culture, it is there argued that it "may go back even to 1600."

³ *Ant. J.*, July-Oct. 1948, 152.

⁴ In Exeter Museum (information kindly given by Lady Fox) and for Cornwall, H. O'N. Hencken, *Archaeology of Cornwall*, 74.

⁵ As Dr Leisner has argued to have been the case with the beaker users in Iberia (*op. cit.*, 454, 573). Dr Leisner regards the classical beaker with alternate plain and hatched zones as sea-borne and intrusive from some unidentified source further east in the Mediterranean. His argument regarding the absorption of the beaker users extends however to Andalusia, where the classical beaker hardly occurs and the "beakers" in question are predominantly not of beaker shape and decorated in the style derived from the Palmella pottery of the Tagus Estuary. The Palmella style of decoration, which is applied to a wide range of vessels and plates, presumably is intrusive on the Guadalquivir; and burials accompanied

In 1943 Sir Cyril Fox, discussing the beaker cultures of the West, showed them to overlap with the Wessex Culture, and dated them from 1800 to 1500 as against the 1700 to 1400 bracket of the latter.¹ Some such overlap is indeed suggested by Professor Piggott's data, for his graves include imports from the northern Food-Vessel Culture, which, in Scotland at least, partially synchronised with beakers.² And at Fargo Plantation in Wessex itself Dr Stone has shown that an Irish food-vessel and an A beaker were probably contemporaneous deposits in the same tomb.³

Some importance as a chronological horizon may attach to the introduction of the custom of unurned cremation burial. Such burials occur in Irish chamber tombs, and Sir Cyril Fox has shown in the paper cited that in Britain they may be accompanied by pygmy vessels, presumably related to the Wessex Culture cups, which appear independently of, and earlier than, cinerary urns, and indeed often with inhumations; and further that the overhanging rim urn, which may occur as a vessel accessory to an inhumation, may be decorated in beaker technique. Important light is thrown on the introduction of unurned cremation burial by Mr Atkinson's brilliant series of excavations of "henge" monuments at Dorchester, Oxon.⁴ While the classification of these ditched and banked enclosures is still an open question, and some seem to be associated with A beakers, it has been shown that some of the single-entrance, and generally smaller, enclosures were thickly peppered with unurned cremations, particularly in and near the ditch. They were further distinguished by Woodhenge, or sometimes Windmill Hill or Peterborough, pottery, and by long bone pins; these are related by Mr Atkinson to the similar pins of Skara Brae, and it is hard to believe that they are not also related to the long pins of the Irish chamber tombs, which in turn are generally held to be related to the pins found in tombs and habitation sites in Iberia.⁵ It is to be noted, moreover, that the bank, ditch and

by pots in this style may represent an absorbed element in the population, but not the same element as is represented by the classical beaker in South-east Spain. In the Tagus Estuary, where the two quite distinct types of pottery both occur, their mutual relations are still unknown.

¹ *Arch.*, lxxxix. 89 ff.

² Cf. V. G. Childe, *Prehistoric Communities*, 131. It is quite accordant that in an easterly region such as Yorkshire the food-vessels should be later than the beakers wherever the two cultures appear in mutual contact; and a similar time sequence may be expected in inland regions such as the Trent and Thames valleys which provide river ports open to North Sea shipping.

³ *Wills. Arch. Mag.*, xlviii. 363.

⁴ Reported verbally to the Prehistoric Society; written report forthcoming from the Ashmolean Museum.

⁵ The British series of long bone pins is fairly closely in parallel with the South Iberian series: for which see Leisner, *op. cit.*, 451 ff., and tomb inventory and plates *passim*. In both areas the majority of the pins have plain round shafts without significant enlargement at the head. Of the specialised types with enlarged heads, that with plain cylindrical head is the most common in South Iberia; since the heads were frequently made separately and fitted as handles over a bone shaft or a copper awl, this type may be an awl rather than a pin. There are no British analogues. The type with flat spatulate head occurs both in Spain and Portugal; in Britain it occurs in the Bateman collection from Staffordshire and three times at Skara Brae. The well known type with segmented (transversely grooved) head belongs essentially to Western Iberia; it occurs in Ireland in a cremation cist in Galway and also,

Aubrey holes at Stonehenge form such a henge monument and that they contained similarly numerous unurned cremations, a fragment of Woodhenge pottery (with beaker at a higher level), long bone pins, a cushion mace-head and the vase support already mentioned. It seems at least probable, moreover, that the same burial customs can be traced to Brittany: the Er-Lannic enclosures, which produced so many vase supports, were thickly peppered with unurned cremations each protected by a few slabs; rectangular enclosures such as Manio, covered by a low mound with standing-stones in or close to them, produced plain and (apparently) Chassey type pottery and were thickly scattered, both within the mound and near it, with similarly protected unurned cremations.¹

If Mr Brailsford is right in his interpretation of the Sheep Down excavation,² a further class of such cremation enclosures is to be found in Wessex itself in "pond barrows" producing food-vessels and overhanging rim urns. If so, and if we adopt the established conventions, we shall have to suppose the existence within Wessex of a tribe of persistent cremators who, throughout a period extending from the "Neolithic" to the "Middle Bronze Age," adopted in succession, and from different sources, a long series of pottery types, but continued to bury their dead in accordance with an unurned cremation ritual. The history of North-west Europe in the first millennium A.D. shows however that tribal groups are more surely identified by their domestic artifacts than by such more infectious practices as burial rites,

though in an abnormal form with wide grooves, at Skara Brae. The Tagus Estuary produces also a diversity of elaborately worked heads (*cf.* particularly San Pedro, *Actas y Memorias*, xx, 1945, 38) but most belong to small pins; among large pins the established comparison with those from the Irish tombs, though no doubt a real one, is not very close. A specifically British variant, which is only common at Skara Brae but occurs once each at Crosby Garrett barrow in Westmorland, at Stonehenge and at Windmill Hill, has a lug worked on the shaft and perforated. The principal associations of the long pin in the British Isles are: Ireland, in the passage graves and the Galway cist mentioned above with cremations and food-vessels, but also in a recent find with a round-bottomed bowl (information from Professor O'Riordain); Orkney, with Rinyo I and II wares at Skara Brae and also (an unpierced-lug pin) in the chamber tomb of Quoyness with stone objects of distinctive Skara Brae type; Man (an Irish mushroom-headed pin) with cremations and Glencrutchery ware; North England, with simultaneous inhumations and cremations and a plain neolithic bowl at Duggleby Howe, with inhumations and cremations at Crosby Garrett, and with cremations and a food-vessel at Garton Slack, barrow 112; in Anglesey, with groove-decorated neolithic pottery at Llygwy; in Southern England, at Dorchester and Stonehenge with the associations stated above, and at Windmill Hill in a Peterborough-Beaker horizon. The Iberian long pins are attributed by Dr Leisner to the Full Copper Age and occur in chamber tombs with both inhumations and burnt bones. Despite the differences indicated above, and the present limitations in our knowledge, the more or less simultaneous appearance (and subsequent disappearance) in Iberia and the British Isles of this family of long bone pins in habitation sites and in tombs showing both inhumation and cremation is not likely to be fortuitous and argues a South-western derivation for the British Isles family.

¹ *L'Anthropologie*, xliii, 225 ff., and xliv, 487. Manio is in Morbihan, but a number of such enclosures occur also in Finistère (P. du Chatellier, *Les Époques Préhistoriques en Finistère*, 20, 23, 182 and pl. vi). Pen-ar-Ménez and Kervilloc, Treffogat, contained rectangular enclosures apparently up to 60 feet by 30 feet with many cremations in small cists against the walls and with neighbouring standing stones. The finds included round bottomed plain pots, maces and pendants and also (relying on *ibid.*, *La Poterie . . . en Armorique*, pl. ix, 1) beaker fragments.

² *Arch. News Letter*, April 1949, 12, 13.

and the suspicion is aroused that the Wessex pottery sequence is not one in time; that the pottery types were to a material extent contemporary and the styles of different tribal (or caste) groups; and that the practice of unurned cremation gradually spread among these different groups to the ultimate exclusion among them of inhumation in chamber tombs, cists and earth graves under barrows.

In the light of these conflicting considerations it may be well to look again at Brittany, the suggested source of Professor Piggott's culture, and to study the Breton sequence already mentioned, which has been acutely analysed by Mrs Hawkes in its Jersey manifestations. The earlier culture at the stratified site of the Pinnacle¹ included round-bottomed carinated pots with upstanding lugs, and also pots decorated with straight or festooned lines of jabs, panels of punctuations and lines of bosses. This decorated ware is clearly of Chassey type and related to the vase support, which itself occurs in Jersey though there are no certain examples at the Pinnacle. The later culture on the site included coarse straight-sided or barrel jars with relief decoration in straight or curved finger-tipped cordons, beaker ware, Grand Pressigny flint, a segmental pendant which parallels that from Skara Brae, and a copper axe with expanding edge. This accords with the sequence: Neolithic and Rinyo I; Rinyo II and beaker, which we have found in the Hebrides and Orkneys—even to the axe, which appears at Unival as an axe pendant. There is no similarly reliable analysis for Brittany itself and, though we know that in one tomb (Conguel) beaker ware was stratified over Beacharra ware, we can broadly say no more than that analogues to the British pottery styles discussed above all occur in the chamber tombs. Nor are other Wessex products absent from the chamber tombs, which have produced spacing beads belonging to a crescentic necklace of Food-Vessel Culture type, a jet spacing-bead and, as already stated, a segmented faience bead.² The grooved and midrib daggers on the other hand, and the square-tanged arrow-heads, occur in sub-megalithic or corbelled cists, in which they are unaccompanied by pottery; and, as these show a distribution generally contrasting with that of the chamber tombs, they must represent a different tribal group. They are not necessarily to be assumed later in time, since midrib daggers occur in Iberian chamber tombs which are presumably contemporary with those of Brittany.

Most of these Breton types, and in particular the Breton analogues of the Aldbourne and grape cups of Wessex, can be traced further south along the Atlantic route; but it does not seem to have been noticed that in Southern Spain and the Tagus Estuary a series of pygmy vessels, or pyxides,

¹ Jacquetta Hawkes, *Archaeology of the Channel Islands*, ii. 72 ff., 88 ff. and 160 ff.

² Amber spacing-beads in the Lesconil group of tombs (*American Anthropologist*, xxxii. 89); faience bead in Pare-er-guren tomb (*l'Anthropologie*, xlv, 507, fig. 19); jet spacing-bead from Kerguevarec (*P.P.S.*, 1930, 193).

can be identified which parallels the series of early incense cups in wider areas of Britain. These Iberian vessels, which are characteristic of the richer tombs, may be of stone, bone or ivory as well as of pottery and, in marked contrast to the other vessels of the South Iberian tombs, they are frequently decorated. There are two characteristic shapes: one is squat biconical like a bird's-nest pyxis, and the other is straight-sided, either vertical or sloping slightly inwards or outwards; the bottoms are slightly rounded or flat; the rims are occasionally developed. The decoration, which commonly covers the pot and may extend to the bottom, is by deeply grooved, incised, or (rarely) painted lines; dots (exceptionally in paint); stabs; and bosses. Apart from rare *oculi* and other magical devices, the design elements used are: widely spaced cross hatching; continuous zigzag lines set parallel to one another and at some distance apart, and running either horizontally or vertically; large triangles alternately plain and filled with dots or stabs; parallel rows of close-set bosses. These design elements (apart from the last) are sometimes arranged in metopes and are commonly set off by groups of horizontal lines above and below; their effect is a distinctively open pattern in contrast to the close decorative styles of Palmella and the beakers. Some of these small pots had a lid, some a rebate for a lid and some two or more holes in the side to take a string to secure a lid. It is in these last respects that comparison with the early British incense cups is the most obvious, but closer study shows that similarities in shape and in the distinctive style of open pattern are the more decisive. These similarities are in just those characteristics of shape and pattern which the incense cups cannot have inherited from British neolithic, beaker and food-vessel pottery—the consideration which has already led to the acceptance of the Atlantic route derivation of the Aldbourne and grape cups. The significant comparisons are naturally with the early incense cups, such as are found normally with inhumations and unurned cremations, rather than with the types developed subsequently within Britain, and commonly found inside cinerary urns, at a date when movement along the Atlantic route had ceased.¹ Comparison may also be made with the Folkton drums, which are presumably lidded pyxides carved in the solid.² It is not necessarily to be inferred from these comparisons that our early

¹ As examples of the two series compare Los Millares, Tombs 5, 8, 9, 21, 39, 47, Loma de las Eras, Los Castellones, Loma de Huéchar, Blanquizaes and the silos of Carlero (Leisner, *op. cit.*, pls. 13, 16, 19, 22-25, 29, 37, 153, 155, 159, 160) with the following: Wessex and Devon, Abercromby, ii, figs. 235, 236, 240, 249, and the grape cups shown in Professor Piggott's paper; South Wales, *P.P.S.*, 1938, 117, fig. 7 (with decorated bottom and red filling); Lancashire, *Arch.*, ix, 191, pl. ix (round bottomed cup with inhumation); Yorkshire, Abercromby, ii, figs. 112b, 308; Ayrshire, *P.S.A.S.*, lxxii, 241 ff., figs. 7, 9 (two cups, one with decorated round bottom and omphalos, together with an overhanging rim urn, in a cremation enclosure); Angus, the Gilchorn cup mentioned on p. 40 n. 1 above; Hebrides, Unival pot 51; Orkneys, *P.S.A.S.* iii, 485.

² Dr Leisner compares them with the stone jar with lid rebate from Los Millares, Tomb 40 (*op. cit.*, 479, n. 1).

incense cups are direct derivatives of the Spanish series of vessels; indeed it is rather more probable that both series originate in a common Mediterranean source.¹ Of the Iberian vessels some are plainly derivative, though very likely at second hand through Central Mediterranean settlements, from the pottery and stone pyxides decorated in the incised geometrical style with white or red filling which was revived in Crete in M.M.I. times.²

Having called attention to these discussions subsequent to, and largely stimulated by, Professor Piggott's paper, it is the purpose of this note only to suggest one very broad conclusion. It does not now seem likely that success would attend an attempt to arrange the pottery types of Wessex in a series in time, each type representing a culture which, in orderly manner and after a decent interval, displaced its predecessor. It seems more probable that the new synthesis when it is achieved will contemplate rather cultures flourishing contemporaneously within the area, and even in close proximity. Thus, in the case of the beakers, it has become less than ever plausible to suppose that a handful of A beaker users swept over Wessex from the east, extinguishing existing cultures, B beaker or otherwise, as they went. Such devastating tribal movements are more common in archaeological literature than in real life, and the evidence for Wessex does not require us to assume them. On the contrary, as has been said, the data available for Western Britain much more strongly suggest that eastern (and relatively backward, beaker users were absorbed into the pre-existing societies with little disturbance to the pre-existing cultures; and probably in quite a gradual manner over several generations. Thus introduced, their pottery came to be adopted in the West for use even in the family graves.

No different explanation is required for other cultural elements. It has been suggested that the phenomena comprehended in the "Wessex Culture" point to trade rather than to conquest; and primitive trade very commonly leads to settlement among the tribes the traders visit. There is no need to suppose that the Breton "Chassey ware people," or the Breton "dagger grave people," displaced an already established "B1 beaker people" when members of these several tribes moved into Wessex. It may be that the B1 beaker movement reached Wessex (from whatever source) the earliest, though if the source was Brittany, as Professor Piggott argues, it would be difficult to deduce such a priority from the Breton evidence³; but, whether so or not, the several drifts of population which are implied may quite well have been proceeding simultaneously, and in amity, and from different parts of Brittany or Northern France. Within the same period those movements may have been occurring which carried up the Atlantic route the pottery

¹ On navigational grounds shipping movements from the Mediterranean to Britain by the Aude-Garonne river route are more readily to be presumed than movements from the Tagus round Cape Finisterre in Galicia.

² A. Evans, *Palace of Minos*, iv, 87 ff., and i, 177 ff.

³ Professor Piggott has recognised the difficulty (*P.P.S.*, 1938, 95).

traditions which produced in the Hebrides and Orkneys the wares which we have called Rinyo I and II; over wide areas of Britain and Ireland the early food-vessels and incense cups; and in Wessex and the South the types we have rather vaguely included in Woodhenge ware. And at widely varying dates the tribes in question may have absorbed beaker users. During the whole period parties of traders and settlers were carrying up the Atlantic route their several native burial practices: inhumation in chamber tombs, inhumation in closed cists, unurned cremation in chamber tombs and unurned cremation in henge enclosures.

Such a picture supposes that the episode in the second millennium history of North-west Europe, in which trading relations were open with the Mediterranean, can be confined within two or three centuries: be it noted no insubstantial period. Professor Piggott's bracket of 1700-1400 B.C., but brought down a century to 1600-1300 B.C., could comprehend, not only his "Wessex Culture" phenomena, but also the other incidents of Atlantic route trade, not excluding the introduction of the chamber tomb cult and the displacement by Beacharra and Unstan ware of the native Windmill Hill pottery. It is to be borne in mind that all the Continental analogues of the pottery types from which we argue occur on the Continent in chamber tombs, and, though we have reason to question the Continental evidence as insufficiently distinguishing between different strata, the Jersey analysis quoted above supports the assumption of contemporaneity there of types which we have sought to arrange in a spaced time sequence here. The Iberian evidence, though lacking the confirmation of stratigraphy, yields a like conclusion. In Central Europe it is now recognised that Reinecke's periods A2 and B were contemporary and not successive, and each alike can be dated back to c. 1450 B.C. but—on specific evidence—no further.¹ There is, moreover, the broad consideration that throughout Western Europe from Almeria and Algarve to Scandinavia the consensus of evidence is that the chamber tomb cult was a relatively later episode in the prehistory of those lands than we have been prepared to admit it to be in Britain; and, it may be added, one correspondingly more consonant with the Ægean evidence, if the cult was the result of trading voyages thence.

The time is ripe for reassessment. The writing down of chronologies in the Near East is being followed in the Central and Western Mediterranean. Dr Bernabo Brea is understood to equate the beginning of the Siculan I period with Middle Minoan I, and therefore to bring the earliest chamber tombs within the second millennium. Dr Leisner's analysis of the Iberian material justifies no earlier date for the chamber tombs there,² and it would

¹ Reinecke B from the spacing bead in the Kakovatos tomb; Reinecke A2 from the Aunjetitz pins in the Wessex Culture graves. (V. G. Childe in *Festschrift für Otto Tschumi*, 70 ff.).

² *Op. cit.*, 586 ff., reliance not being placed on the tentative derivation of the two segmental bone objects from Los Millares, Tombs 1 and 7, from Egyptian copper axes to be dated not later than 2080 B.C.

seem on general grounds that they must be later. For trading settlements only follow trading voyages, and Central Mediterranean colonies would hardly attempt trading ventures in remote Iberia until they were themselves mature. The exploitation of the Atlantic route, which can hardly have preceded in less than three stages, South France, Brittany and Western Britain, would at each stage have involved a pause for the establishment and maturing of each new colony. It is surprising indeed that a chain of trading settlements can be shown to have been established between Western Britain and the Ægean by the mid-fifteenth century. If we seek economy in surprise, we should forebear, so long as established evidence does not require it of us, to presume a date before the sixteenth century for the beginning of our relations with the Mediterranean and the building of our first chamber tomb.

APPENDIX IV.

The Chamber Tomb of Cletraval.

When the chamber tomb of Cletraval in North Uist was excavated, the peristalith was traced for a distance of 30 feet in a straight line from the southern end of the tomb façade (*P.S.A.S.*, lxi. 492-4, and Pl. I). While it was suggested that the tomb enclosure was wedge-shaped, trenches dug to the south and south-west of the "dun" which had been built to the west of the tomb chamber failed to identify the further course of the peristalith, and to the north of the tomb peat diggings rendered excavation useless.

The "dun" has now been excavated and found to be a farmhouse of the aisled round-house culture lying with numerous outbuildings within a farmyard wall. The pottery evidence shows this to have been built in the later part of the first century B.C. by immigrants from South-west Britain or North-west Gaul, who also built the "wheelhouses" of the Vallay group excavated by the late Dr Erskine Beveridge. The excavation of the house is reported in the *Proceedings of the Prehistoric Society* for 1948 in a paper which deals with the aisled round-house culture as a whole, and the site plan in fig. 8 is reproduced by permission from those *Proceedings*. It will be seen that a further stretch of the peristalith was identified to the south of the entrance of the farmhouse, where it had been incorporated as a bench across an outside shelter or working place. The floor of this shelter was paved over a thin scatter of cairn material at a level 6 inches above undisturbed soil and the base of the peristalith wall. To the west of the shelter the peristalith wall had been robbed down to its footing, and its stones used to build the back wall of the shelter.

The peristalith here consisted of a battered revetting wall 1 foot 9 inches high, well built of small and uniform slabs, and supported externally by a ramp of similar slabs set at an angle of 45° to the horizontal. It thus

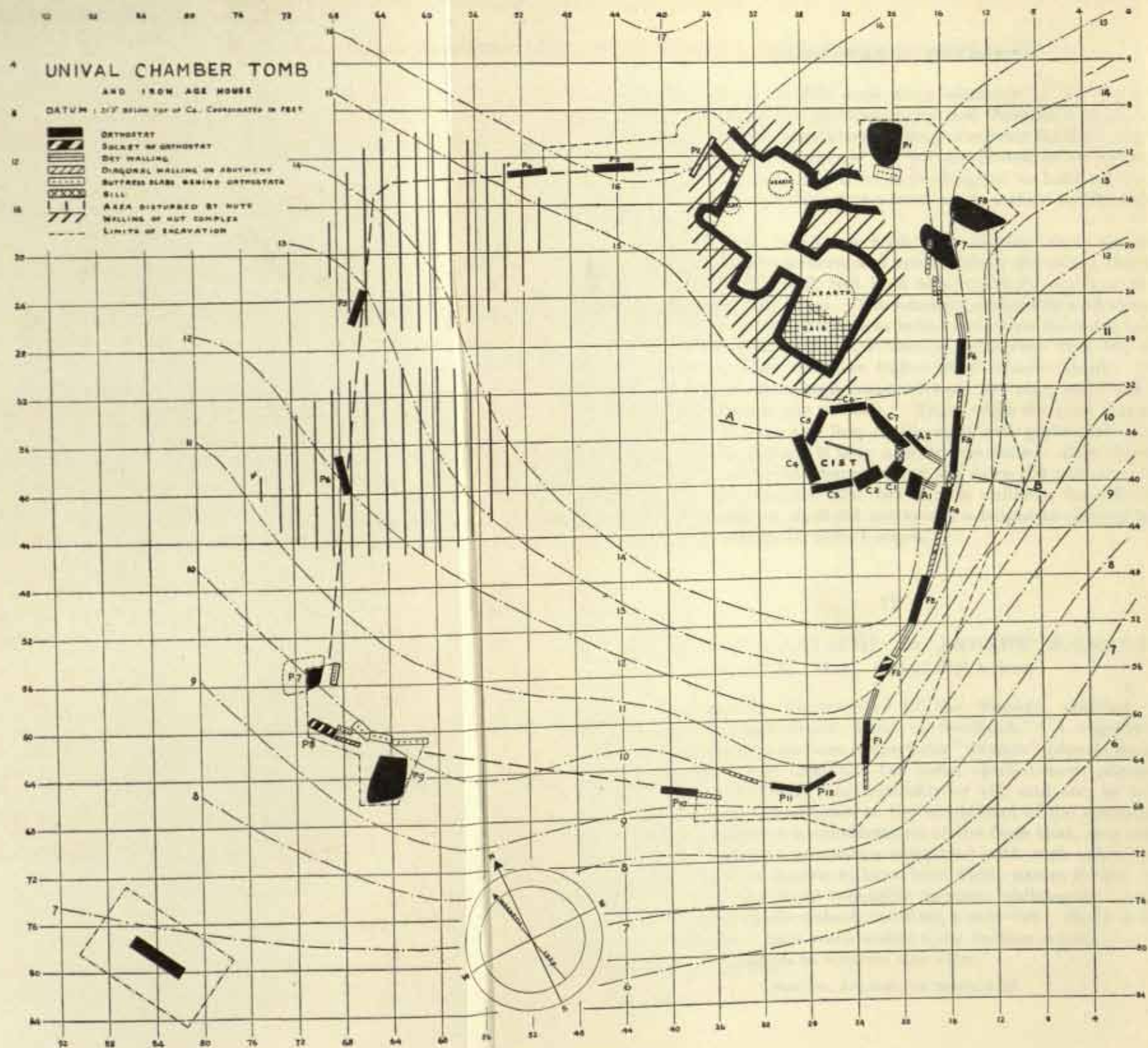


Fig. 1. General Plan.

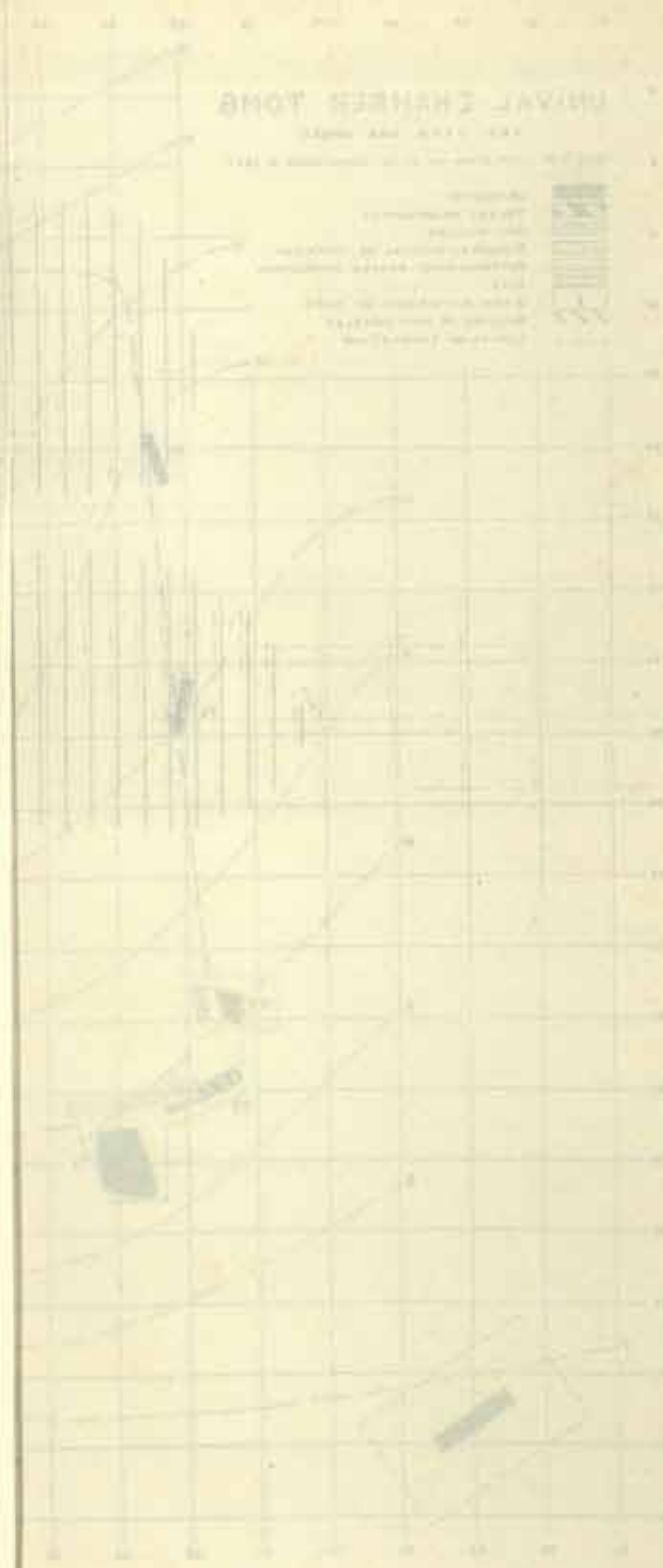
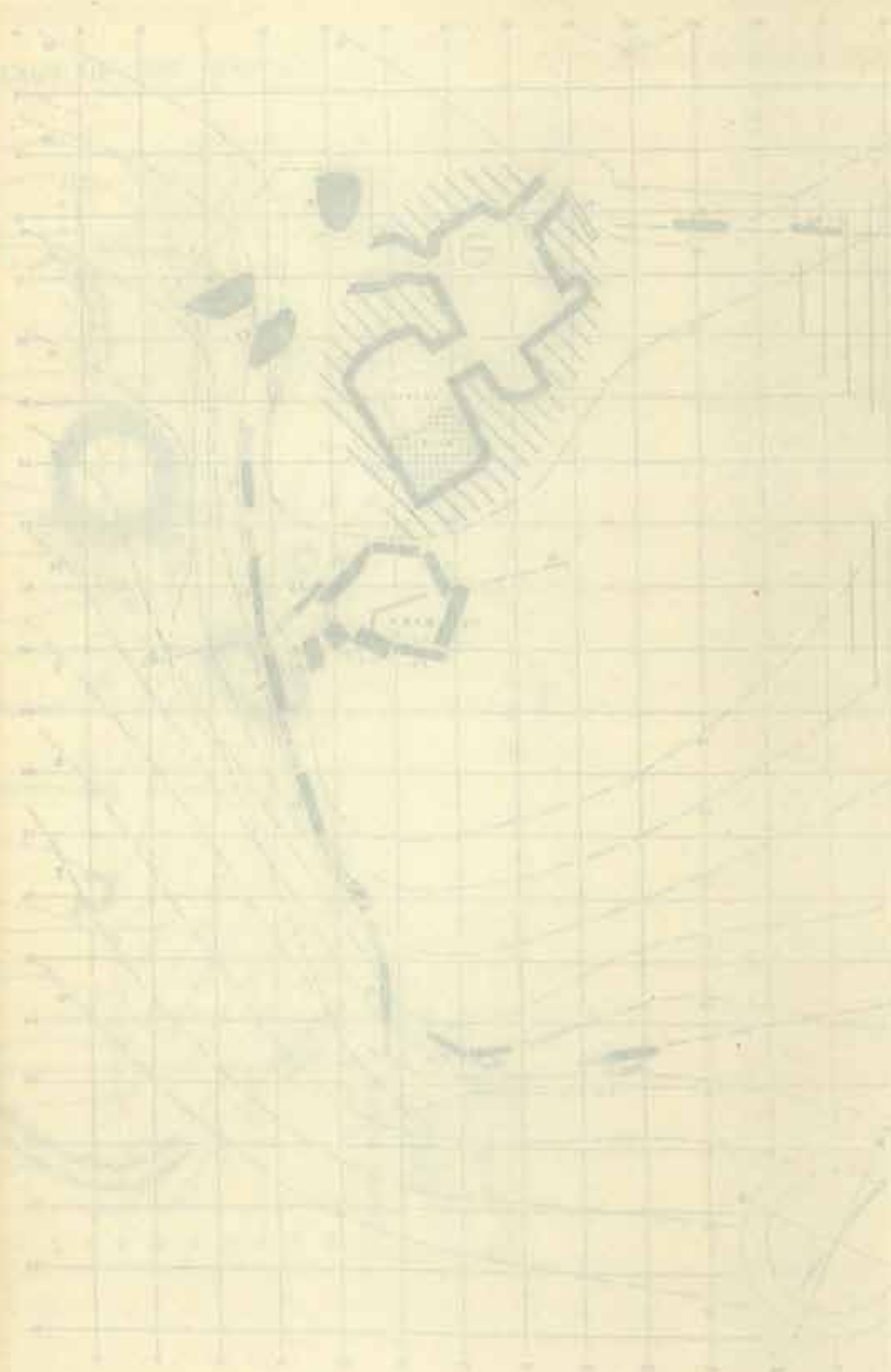
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REPORT OF THE JAVANET

REPORT OF THE JAVANET

REPORT OF THE JAVANET

REPORT OF THE JAVANET



corresponded with the middle and outer elements of the stretch of the peristalith described in the previous paper and illustrated there by fig. 11. The inner element there mentioned of large irregular boulders was missing, and it is possible that this should not be interpreted as an element of the peristalith, but as a structural revetment designed to hold up the cairn on the slope of the hill, and thus give a level cairn surface to the south of the tomb chamber.

The builders of the farmhouse took their material from the tail of the cairn, and also from the northern, and uphill, side of the cairn; this side, with the northern peristalith wall, had been so completely removed as to allow of peat diggings in recent times. The southern peristalith wall was evidently exposed to view when the shelter was built, and, from the total quantity of stone used by the farm builders, it can be calculated that the cairn had originally stood at most two feet higher than it now stands. (No cairn material had at any time been removed from the site, since there are no other stone structures in the vicinity.) Thus, while the peat diggings make it impossible to recover the line of the northern peristalith wall or the northern end of the façade, it may now be concluded: that the tomb enclosure was long and wedge-shaped; that the cairn did not cover the tomb chamber or the tomb façade; and that if, as is unlikely, the cairn extended outside the peristalith at all, it did not rise to a height to conceal more than its footing. (See also p. 31, note 1 *supra*.)

II.

WHAT WAS A DAVACH? BY ANDREW McKERRAL, C.I.E., M.A., B.Sc., F.S.A.Scot.

In a paper in the *Transactions* of this Society, entitled "Ancient Denominations of Agricultural Land in Scotland,"¹ I suggested, when considering the meaning and use of the term "davach" (*dauch, daugh, doch*), that it might have been originally the name applied more particularly to the *arable* area of the Celtic rural township or vill, and not, as is found at later dates, in some cases at least, to the whole land of the township. This view was based mainly on a consideration of the facts that, as a place-name prefix, it is of infrequent occurrence compared with such other prefixes as *bally* and *pit*, which are known to have been Celtic names for the township, and also, because the most reputable modern philologists consider the word to be from old Gaelic *dabach*, meaning a seed-vat. Since writing that paper five years ago I have come across some further evidence, not known to me then, which appears to confirm this view.

¹ *Proc. Soc. Ant. Scot.*, vol. lxxviii. p. 39.

In a late eighteenth-century account of the agriculture of the northern counties,¹ the author, Sir John Sinclair, in treating of Inverness-shire, makes the following remarks: "A *soum* is understood to be the grass of a full-grown cow or ox, a horse is estimated at two *soums*, and in most Highland counties four sheep, but in some cases five. . . . Another mode of estimating the extent, and consequently the yearly value, of arable ground, in one or more farms was, in early ages, and still continues to be in some cases, by the *daugh*, the *aughten* part, the *boll*; in other cases by pounds (Scots), the markland, the penny and the halfpenny, of which I could not obtain an explanation altogether satisfactory, and therefore suppose these different terms expressed some old valuation long ago exploded."

In a footnote he states: "*daughs* and *bolles* are unknown anywhere south of Inverness-shire. Every *daugh* seems to have consisted of forty-eight *bolles*, which comprehended a greater or smaller district of country according to the quality of the soil. The *aught* or *aughten* part (which appears to be a corruption of the eighth part) consisted of six *bolles*." He also makes the statement that the *daugh*, or *davach*, fixed "the general and known levy of soldiers," and was "a rule to the chieftain for raising his followers."

In the above account we have a clear distinction drawn between the mode of measurement or valuation of grazing land on the one hand, and of arable on the other. In the case of grazing the unit was the *soum*, or grazing of a cow; in the case of arable it was the *daugh* or *davach*, divided into *aughtens* and *bolles*. This subdivision was clearly based on the seed-rate for oats, which was from 4 to 6 firlots, or a boll, to a boll and a half, per acre,² so that on this computation the *aughten* would be approximately 4 to 6 acres, and the *davach* 32 to 48 acres of sown land. The *davach* thus appears to have been a ploughgate, in the sense that an area of 50 acres more or less was the amount that a single plough could turn over in a season.

In a report on the parish of Elgin we find some evidence confirmatory of the above definition of the *davach*. In describing the lands of the burgh of Elgin the author remarked: "There is a large field of arable land to the west of Elgin . . . divided into what are called *auchteens* parts, but consisting of sixty four, which may vary in extent from 4 to 6 acres. Originally, they belonged to 64 different proprietors, burgesses of Elgin."

The writer is apparently puzzled to explain why the field should have consisted of 64 *auchteens*, which he apparently interprets as eighteenth parts. The word *auchteens*, occurring in his report, is clearly a misspelling of the *aughten*, or eighth part, mentioned in the Inverness survey by Sir John Sinclair, and the correct interpretation would appear to be that the

¹ *General View of the Agriculture of the Northern Counties*, p. 76 and note.

² *General View of the Agriculture of Midlothian*, p. 104.

burgh lands of Elgin consisted of 64 *aughtens*, or eighth parts, and so were of an extent of 8 davachs in all.

Clearly, then, in both Inverness and Elgin the term davach was still in use in the eighteenth century to describe *arable* land. In other cases, however, it is used in such a manner as to refer to the township as a whole, with particular reference to its grazing capacity. W. F. Skene records an old tradition existing in some parts of the Highlands, given to him by Colonel Macdonnell of Glengarry, that a davach was grazing for 320 cows.¹ This would practically equate its extent with that of the Irish "bally," as described in a very ancient Irish poem, quoted by Skene²:

"A baile sustains three hundred cows.

Four full herds therein may roam
With no cow of either touching the other."

The four herds of the Irish bally probably accounted for its division into those "quarterlands," or *ceathramhs*, which were a characteristic of Celtic landholding in Ireland, in the West Highlands, and in the Isle of Man.

Both Skene and Sir John Sinclair make the assertion that the davach was the unit on which the ancient pre-feudal military service (*servitium Scoticanum*) was levied, and in my paper referred to above certain fourteenth-century examples were cited which support this view. In such cases the reference to the davach is more likely to have been to the township as a whole. In ancient Dalriada, the obligation to the *feachtmara*, or sea expedition, was laid on each group of twenty houses, which were required to provide between them a ship with twice seven benches of oars.³ This is clearly the same unit on which the Norse lords later laid a scat of an ounce of silver (or a silver penny on each house) and which, accordingly, became known as the *Ounceland* or *Tirunga*. I gave some examples which definitely equated the Ounceland unit with the davach.⁴ In a charter of King Robert the Bruce to the Earl of Lennox, dated 1321, the reddendo of the military service is specified as that pertaining to ten full *vills* [*ad decem plenarias villas*], and the reference in this case is clearly to the township as a whole.⁵ In some other Lennox charters however the military service was levied on the "arochoir," which is a Celtic term for a ploughgate, and was perhaps the Lennox equivalent of the arable davach, while the fiscal unit is the individual house, each of which had to supply two cheeses.⁶

These apparently conflicting uses of the word can be reconciled if we remember that the vill, or township, was a tenement of land and houses, and that, while the military service would be levied on, and the fiscal burdens collected from, the vill as a whole, their incidence would be on its

¹ *Celtic Scotland*, vol. iii. p. 227.

² *Ibid.*, p. 154.

³ *Ibid.*, p. 235.

⁴ *Proc. Soc. Ant. Scot.*, vol. lxxviii. p. 56.

⁵ Fraser, *The Lennox*, vol. ii. p. 19.

⁶ Fraser, *Chiefs of Colquhoun*, vol. ii. pp. 272-6.

component parts, and they would sometimes be described as being levied either on its lands or on its houses.

Transposition of words, from the things which they originally denoted to others, is frequently encountered. For example, the word *tun* was originally a Teutonic name for the rural township, but has now become appropriated by the purely urban community, or "town." A *burgh* now means a town, but it was originally the *borg*, or stronghold, round which the town grew. A *farm* is now a piece of land, but the word meant originally the *ferm* or *firma*, that is the produce rent, which the land paid. So, too, it would appear, from the evidence cited above, that the name *davach* had been first of all applied to the arable land of the vill or township, but that in time, in certain cases at least, it came to denote the whole of which it had been originally only a part. (See also Notes, p. 286.)

III.

SOME ANTIQUITIES IN THE PARISH OF CRAIGNISH.

By A. GRAHAM, F.S.A., F.S.A.Scot.

Read May 10, 1948.

The spit of land that ends in Craignish Point, the northern "jamb" of the Dorus Mor, is something under seven miles in length by just over two miles in breadth along its base, which is defined by the highway from Oban to Lochgilphead (fig. 1). It divides Loch Craignish from the land-locked waters east of Corrievreckan and Scarba, and is formed for the most part of steep rocky ridges, broken hills, and moorland; only a few summits rise more than 400 feet above sea-level. Most of the lower-lying ground has been improved for farming, though the arable land is interrupted from place to place by crags, gullies, and scrub-wood. The shores are diversified by bays, inlets, and islands, and Loch Craignish in particular, being free of dangerous currents, is convenient for navigation by small craft.

Apart from some short notes by Christison on four of the forts,¹ an account by Childe of a cist-grave,² and a brief description of the old part of Craignish Castle,³ the antiquities of this region have received but little notice. In view, therefore, of their rather large numbers in relation to the size of the area, as well as of the particular interest attaching to some of the forts, it has seemed worth while to make public the following notes on some of the earlier remains, which were compiled in the course of a short

¹ *Early Fortifications in Scotland*, pp. 199, 201, 240; *P.S.A.S.*, vol. xxiii. pp. 417-20.

² *P.S.A.S.*, vol. lxx. p. 396.

³ Macgibbon and Ross, *Castellated and Domestic Architecture of Scotland*, vol. iii. p. 173.

visit in the summer of 1947. And I wish to acknowledge here the assistance very kindly given me in the field by Mrs Lindsay-MacDougall of Lunga, Mrs Collingwood, and Miss Gordon, and at the drawing-table by Mr C. S. T. Calder, A.R.I.A.S., F.S.A.Scot.

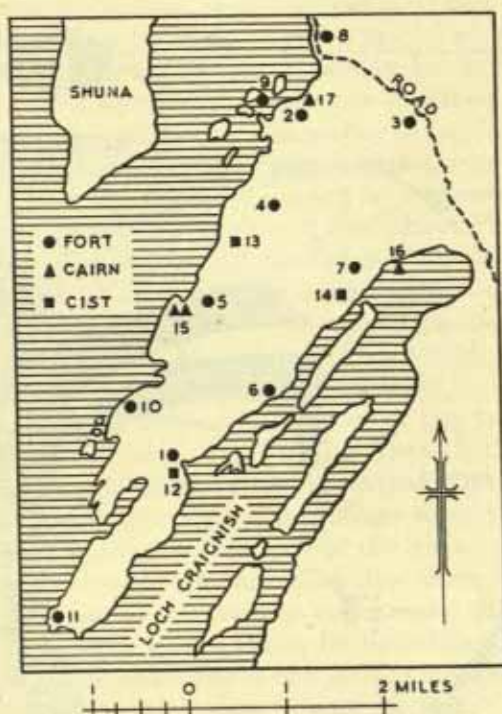


Fig. 1. The Craignish peninsula, showing positions of sites by serial numbers.

FORTS.

The most notable fort in the peninsula is certainly Dùn Mhuilig (1),¹ a "galleried dùn" which occupies the nose of a rocky bluff and overlooks the meadow at the head of Bàgh Dùn Mhuilig from a height of about 150 feet. The remains, which are much ruined, consist of a building on the nose of the bluff with two walls, now reduced to their foundations, stretching across the neck behind, some 30 and 65 feet respectively from the edge of the debris fallen from the main structure. The inner wall shows an entrance gap 6 feet wide. Of the main building (fig. 2), all that can be seen to-day is the lower part of a massive wall drawn across the neck of

¹ For convenience in locating the monuments, the serial numbers that appear in the text—e.g. in this case ("1")—are shown on the sketch-map of the district reproduced as fig. 1. A list of map-references is given at the end of the paper.

the bluff with an extension, which quickly degenerates into a low mound of debris, curving southwards along the west side. At its southern end this wall seems to have incorporated an outerop ridge, on the outside of which some facing-stones are still in place. There are no definite signs of

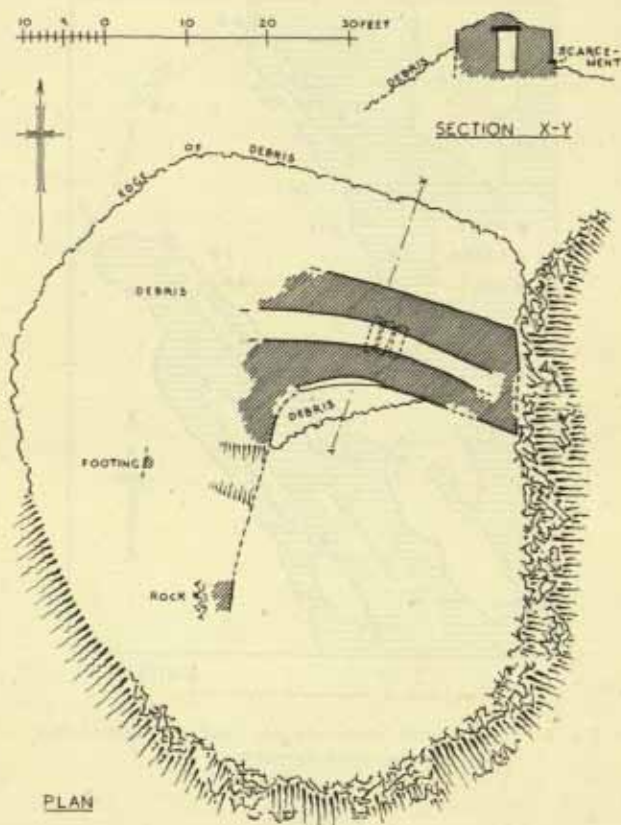


Fig. 2. Dún Mhuilig; plan, and section of transverse wall.

fortification along the southern and eastern sides of the site, where the steepness of the slope may have been considered sufficient protection; it is just possible, however, that the circuit may once have been complete and that this part of it may have been removed by landslips. The area at present enclosed by the wall and the lip of the precipice is more or less U-shaped, and measures about 50 feet from north to south by about 30 feet from east to west. No positive traces of the entrance remain, but a depression in the mound of debris on the western side may mark its position.

The massive transverse wall is of great interest, as it contains a mural gallery with three lintels still *in situ* (Pl. X, 1). Its eastern end is finished

to a face along the lip of what is almost a precipice, and with this its northern and southern faces form angles of rather more and rather less than 90 degrees respectively (Pl. X, 2). For a length of 17 feet from the eastern end the wall is about 12 feet thick, but beyond that point the southern face begins to curve south-westwards and then southwards, while the footings of the northern face can be traced on their original alignment for another 10 feet, so that the apparent thickness of the wall—as far as this can be stated subject to the errors resulting from the piled-up debris—increases to nearly 15 feet. Where the inner face begins to curve, a scarcement, 11 inches wide at its maximum, appears just above the debris; its original height above ground-level cannot be estimated. At its highest, the southern face stands rather less than 4 feet above the scarcement; it is to be noted that the masonry of the face above the scarcement is of large angular blocks, while as much as can be seen of the lower part shows well-laid courses of thin slabs (Pl. X, 3). The mural passage varies in breadth from 2 feet 3 inches to 4 feet, and is 5 feet 1 inch high under the surviving lintels. East of the lintels its floor rises gradually, and as the ruined top of the wall is gradually sinking here, all traces of the passage die out about 3 feet short of the eastern face of the wall. Though this face is disturbed on the line of the passage, there is no indication that an entrance to the passage ever existed here; nor does the passage seem to have been entered through the southern face some 7 feet from the eastern end, where further disturbance occurs. West of the lintelling the floor of the passage rises sharply, but whether this is due merely to unequal filling-up by debris or to the presence of a buried stair cannot be determined without clearance. This end of the passage likewise fades out on the surface of the ruined wall, its total remaining length being thus about 30 feet. Its course is nearly straight, two straight sections being united by one which curves slightly.

The massive galleried wall spanning the neck of the bluff immediately suggests a comparison with the structure on Barra Head, Bernera,¹ and at a further remove with other members of the "galleried dùn" series—for example, Rudh' an Dunain,² Dùn Ardtreck,³ Dùn Liath⁴, Dùn Ringill⁵ and Dùn Grùgaig,⁶ all in Skye. Only four galleried dùns—Dùn Grùgaig (Glenelg),⁷ Kildonan,⁸ Castle Haven,⁹ and Dunburgidale¹⁰—had previously been known elsewhere than in the Western Islands (outer or inner), or five, counting Ardifuar,¹¹ and this addition of another example is consequently of considerable interest, especially in view of what seem to be its "Island" affinities.

¹ R.C.A.M., *Inventory of the Outer Hebrides*, etc., No. 450.

² *Ibid.*, No. 483.

³ *Ibid.*, No. 484.

⁴ *Ibid.*, No. 541.

⁵ *Ibid.*, No. 650.

⁶ *Ibid.*, No. 651.

⁷ *P.S.A.S.*, vol. xxix. p. 183.

⁸ *P.S.A.S.*, vol. lxxiii. p. 185.

⁹ *P.S.A.S.*, vol. xli. p. 68; R.C.A.M., *Inventory of Kirkcudbright*, No. 64.

¹⁰ *P.S.A.S.*, vol. xxvii. p. 287.

¹¹ *P.S.A.S.*, vol. xxxix. p. 260.

A further possible link with the Islands is supplied by a fort (2) near the base of the hill called Mullach Dubh, though in this case the comparison is not with the galleried structures as such, but with the series of small, broch-like forts—some of which, in fact, have galleries. The fort in question (Pl. XI, 1) stands on the highest point of a low and narrow ridge of rock which runs from south-south-west to north-north-east through the

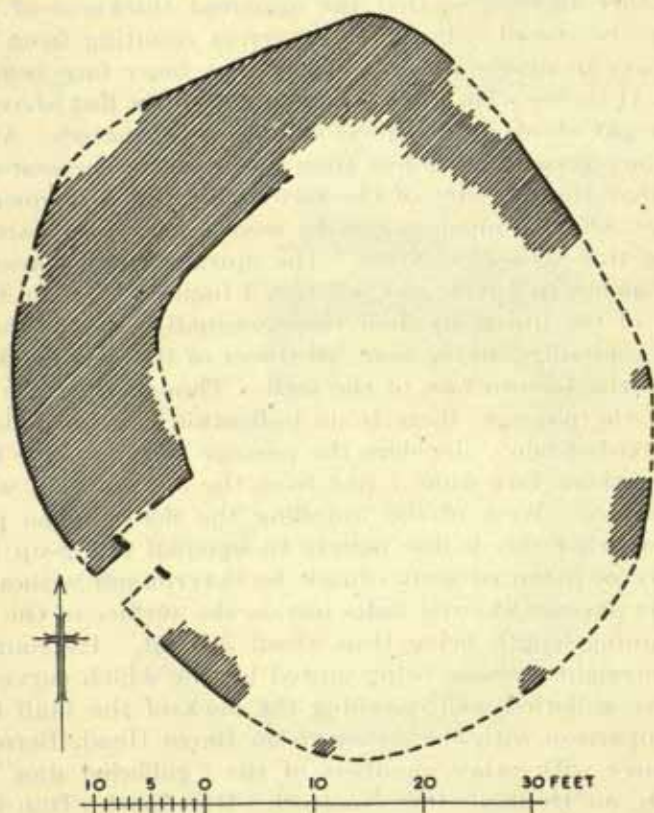


Fig. 3. Fort below Mullach Dubh; plan.

low ground between the foot of Mullach Dubh and the seashore to the west. The slopes below the fort are partially precipitous on the north-west and north and very steep from north-east to south; the easiest access is from the south-west along the ridge; but here again a natural obstacle exists, as the ridge is broken across by a rock-bound gash some 20 yards short of the fort entrance.

The structure (fig. 3) has been heavily robbed, and in only about a quarter of the circumference (the western and north-western portion) can the thickness of the wall be measured. Here it appears to have varied

from about 12 feet to 14 feet. Elsewhere only a few footings of the outer face survive, and from these it appears that the fort measured some 68 feet over all from north to south by about 58 feet from east to west, its shape on plan having been irregularly sub-oval. Christison's small plan,¹ which shows it as circular, is misleading. Except where the footings extend down the slope as a kind of revetment (Pl. XI, 2), the outer face nowhere stands more than two or three courses high, and the inner face generally shows one course only. The entrance-passage, which is on the south-west, is 13 feet long, and most of its western side can be traced, including an upright slab forming a check for a door 4 feet from the outside. The eastern side is ruined except for its check, which may, however, have been somewhat displaced; if it is *in situ*, it would give a width of 3 feet between the checks. While no traces of intramural cells or passages can be seen, and the structure should consequently not be regarded as a broch, its small size, thick walls, and general lay-out are strongly reminiscent of the brochs, and it is for this reason that a comparison is suggested with the broch-like dùns of Skye and the Outer Hebrides.

Mullach Dubh, however, was probably not the sole example in this neighbourhood of the broch-like dùn, as the sites of at least four others, on which virtually no stonework survives, are of shapes and sizes suitable to this type of structure. Thus An Dùn (3),² which overlooks the Oban-Lochgilphead road near Barravulin, is now represented only by the flattened summit-area of a steep-sided hillock, with a terrace scooped out of the slope below it on the north-eastern and another on the south-western side; this flattened space is roundish in shape and measures no more than 50 feet in diameter. Dùn Glas (4), on a rocky hilltop a third of a mile south of Lunga House, must have been even smaller, as the diameter of its summit-area, which is again more or less circular, is only 30 feet. Dùn Ailne (5), again, which stood on a flattened hummock forming the summit of a ridge overlooking Bàgh Dail nan Ceann, seems to have measured about 60 feet along the axis of the ridge by 45 feet transversely. Duine (6), on a knoll by the loch-side midway between Ardferrn and Craignish, was apparently the largest of the four, but as the flattened space even here measures only some 70 feet by 55 feet the comparison still holds good. Possibly the fort on the summit of Beinn an Duin (7) should likewise be counted in; the flattened summit-area, which still shows some footings and traces of an entrance, here extends to the very modest dimensions of 100 feet by 55 feet.

To all the foregoing structures, however, strong contrasts are presented by the four remaining forts. Of these, Dunan Garbh-Sròine (8)³ and the fort on Eilean an Duin (9) resemble one another fairly definitely in siting

¹ Christison, *op. cit.*, p. 240.

² *Ibid.*, p. 201.

³ This structure is, properly speaking, just outside the area defined in the opening paragraph.

and plan, while Dùn an Achanarnich (10) and—in so far as their character can be judged at all—the remains on Rudha na Tràighe (11) seem to differ from all their neighbours. Dunan Garbh-Sròine (8) occupies the summit of an abrupt, rocky mass which rises from the seashore just below the farm of Garrarron; Christison's plan¹ shows it to measure about 250 feet by about 80 feet, with straightish sides following the outline of the site. The walls, which are of very large stones, measure 8 feet to 10 feet 6 inches in thickness, the larger of these dimensions being recorded by Christison; and the approach to the entrance is defended by a roughly constructed outer rampart, not shown on Christison's plan, made of exceptionally massive blocks. The plan of the fort on Eilean an Duin (9) is also determined by the natural outline of the site, and is consequently rather irregular though some considerable lengths of the wall are straight; facilities for its measurement were lacking, but the O.S. map indicates dimensions of some 220 feet by 150 feet. The thickness of the wall could not be determined anywhere. These two large irregular structures, with their fairly long lengths of straight wall, are clearly in a different category from the small forts previously described.

Dùn an Achanarnich (10), to turn to yet another type, is on the summit of a high, steep ridge which flanks the coast south-west of Bàgh Bàn and falls to the sea in a slope which is largely precipitous. The remains of the ruined wall mark out a spindle-shaped structure measuring about 180 feet along the axis of the ridge by about 70 feet transversely. It is uncertain whether a wall ever existed along the lip of the precipice on the north-west. While the plan is again determined by the shape of the site, the builders have made use of all the ground available and evidently had no idea of building a small round dùn. It may be noted that at the north-eastern end, where a hollow way led up to what must have been the entrance, there is, as at Dunan Garbh-Sròine, an outer wall constructed of large rough blocks.

At Rudha na Tràighe (11), the north-westernmost of the tongues of rock that form Craignish Point seems to have been spanned by an ancient wall about 130 yards from its tip. A modern dry-stone dyke partly overrides the remains, which are apt to be obscured by herbage. No other traces of a fort can now be seen on the promontory, but the wall suggests the former existence of some kind of defensive structure; and the impression is heightened by the presence of a hollowed access-track, which leads up from the north-west through the remains of an outer wall set at a lower level. This arrangement is similar to the one noted at Dùn an Achanarnich and at Dunan Garbh-Sròine, but the work is by no means so massive as that seen at the latter site.

¹ *Op. cit.*, p. 199.



1. Dùn Mhuilig; mural passage from west.



2. Dùn Mhuilig; north-east corner from north.



3. Dùn Mhuilig; inner face of wall.



1. Fort below Mullach Dubh; general view from south-west.



2. Fort below Mullach Dubh; masonry on south-west face.



3. Gemmil; cist and cover-slab.



4. Gemmil; cist, showing how end-slab was fitted.

CAIRNS AND CISTS.

While the head of Loch Craignish is separated from the Kilmartin strath by a considerable barrier of hills, the mouths of Loch Craignish and Loch Crinan actually adjoin one another; access by sea from the peninsula to the neighbourhood of Poltalloch must in consequence always have been easy. For the same reason, both regions would have been equally open to the reception of influences coming from over the sea. The possible affinities that may consequently exist between the Craignish cairns and cists¹ and the great Kilmartin monuments adds something to the interest of the former; while the fact that food-vessels have been found in two of the Craignish cists does something, at least, to provide them with an historical background.

The only one of these finds that has as yet been published was made in 1936, when a cist came to light by the roadside near the southern end of Bàgh Dùn Mhuilig (12). It contained two food-vessels, a small stone axe, and a bunch of human hair; these relics are displayed in the National Museum of Antiquities, and have been described and illustrated by Professor Childe in the Society's *Proceedings*.² Relics from another site are on view at the West Highland Museum, Fort William, and are described in a letter from the Curator as consisting of a food-vessel and some jet beads. These objects were discovered in a cist at a point, not marked on the O.S. map, about a quarter of a mile south-west of the farm of Gemmil (13),³ and the very numerous stones that are to be seen immediately to the north-east, east, and south-east of the cist suggest that it may originally have underlain the western part of a cairn. Such a cairn, if it ever existed, may perhaps have been some 36 feet in diameter; and a slab, 4 feet high by 1 foot 8 inches wide and up to 10 inches thick, which stands on the edge of the stony area some 20 feet east of the cist, may have formed part of a peristalith. The cist (Pl. XI, 3), which lies approximately north-east and south-west, is formed of four large slabs, the south-eastern side-slab having some coursed stonework underneath part of it; it is 2 feet 8 inches long, 1 foot 6 inches wide, and 2 feet deep, but the north-western side is actually 3 feet 4 inches long, as one end of the north-eastern end-slab has slipped or been forced out of a mortise-like notch which had been made for it in the north-western side-slab (Pl. XI, 4). The cover-slab lies alongside; its maximum dimensions are 4 feet 6 inches by 3 feet by 8 inches.

Since leaving the district, I have been informed by Mrs Hill, of Himbleton Manor, Droitwich, that another cist was opened some twenty-five years ago on Soroba Farm (14), and that it contained "pieces of broken

¹ Along with which should also be considered some neighbouring monuments in the Barbeck valley and at the foot of the Bealach Mòr.

² *P.S.A.S.*, vol. lxx. p. 396.

³ This name seems to have been entered in the West Highland Museum's records as "Grimmell."

pottery and one or two plaid pins of a much later date." These relics have not yet been traced, but the stones of the cist are said still to be visible near the farmhouse.

Of the cairns in the area other than the remains noted at Gemmil, two stand close together at the south-western end of Bàgh Dail nan Ceann (15), and another on Eilean Carnaich (16), a small tidal islet a mile north-east of Ardfern. All three are considerably spread, particularly the last, and none shows any trace of cists or regular construction. The remaining one (17) is at the foot of the talus of stones fallen from the north-western side of the Mullach Dubh fort; it is 18 feet in diameter and of negligible height, but it does not seem to have been opened. Being constructed of stones which are similar to those in the talus, it may well have been built after the ruin of the fort; at the same time there is nothing to prove that it was not of contemporary construction.

MAP REFERENCES.

Six-inch O.S. Map of Argyll, Sheet CXXX S.W., Nos. 2, 3, 8, 9, 17; CXXXVII S.E., No. 10; CXXXVIII N.W., Nos. 4, 5, 7, 13, 14, 15, 16; CXXXVIII S.W., Nos. 1, 6, 12; CXLVIII N.E., No. 11.

One-inch O.S. Map of Scotland, Popular Edition, Sheet 60, National Grid references: No. 1, 17/776019; No. 2, 17/799076; No. 3, 17/818074; No. 4, 17/795060; No. 5, 17/783045; No. 6, 17/791028; No. 7, 17/807050; No. 8, 17/802089; No. 9, 17/792079; No. 10, 17/769028; No. 11, 16/755992; No. 12, 17/777017; No. 13, 17/786056; No. 14, 17/805045; No. 15, 17/777045; No. 16, 17/814050; No. 17, 17/799076.

IV.

OLD CROMARTY CASTLE. By W. M. MACKENZIE, M.A., D.LITT., LL.D., H.R.S.A., F.S.A.Scot.

In the Chronicle of Melrose it is told how in 1179 King William the Lion and his brother David led a large and powerful army into Ross and there fortified two castles, one named "Dunscath" and the other "Etherdouer."¹ The latter has been identified with Redcastle,² in the parish of Killearnan, on the south shore of the Black Isle. Dunscath is on the north Sutor of the Cromarty Firth, opposite the town of Cromarty across the

¹ P. 22. v. Edirdovar, interpreted as "between the waters," i.e. the Beaully and Cromarty Firths, or "between brooks" (Watson, *Place-Names of Ross and Cromarty*, p. 142; *Celtic Place-Names of Scotland*, p. 454). In Fordun (*Gesta Annalia*, xvi.), drawing on the Melrose Chronicle, the names are "Dunscath" and "Ederdone." Brother David is of course the Earl of Huntingdon.

² *Orig. Paroch. Scot.*, vol. iii, p. 529.

water, where the almost levelled mound and shallow depression of the ditch of the mote-castle founded by King William were still discernible till in recent years the site was subjected to military occupation.¹ The name is for *Dùn Sgàth*, "fort of dread,"² and the neighbouring farm is known as Castlecraig. We may infer a piece of land attached to the castle, as in 1456 the revenue from the "vill" (=to(u)n) of Dunscaith was granted by James II to the church of St Duthus at Tain for the upkeep of a chaplainry, the grant including the ferry of Dunscaith alternatively known as that of Cromarty,³ all being thus Crown property; and the yearly payment of ten merks [£6. 13. 4] to St Duthus being quite a good income for a chaplain, who was also a singing-master.

In the ferry we have the strategic explanation of a castle at Dunscaith, as also of that which supplanted it on the opposite shore at Cromarty. With the ferry from Ardersier to Chanonry or Fortrose it provided a short direct route to the farther north in place of the long, difficult circuit round the heads of the intervening firths. At Ardersier too, on the elevated land above Fort George, are the imposing earthworks of what has been a mote-castle,⁴ which, like Dunscaith or Cromarty, would have served as guardian of the ferry.

By this route two English agents travelled north to Orkney in the autumn of 1290, taking but one day to go from Nairn (Hinernairn) to Cromarty (*apud Crombasin*), which could be done only by using the ferry at Ardersier, as they must have done also on the return journey by Nigg, which adjoins Dunscaith, reaching Nairn again in one day's journey.⁵ By these ferries, too, King James IV shortened his pilgrimages to the shrine of St Duthus at Tain twice in 1497, and again in 1501. On the first of these occasions he lodged a night at Cromarty and made a gift of 18s. to the priest, possibly as his host. Three boats were required to convey the King and his servants.⁶ The ferries were used by Francis Stewart, Earl of Bothwell, in going to and from Caithness in 1592.⁷ Thomas Kirk travelled by them in his tour of Scotland in 1677.⁸ These cases on record just happen to illustrate what must have been a well-known easing and abbreviation of travel in these remote parts.

Dunscaith was no doubt overshadowed and reduced in usefulness when

¹ Hugh Miller wrote (in *Scenes and Legends* (1834), p. 46) that "We can still trace the moat of the citadel, and part of an outwork which rises towards the hill; but the walls have sunk into low grassy mounds, and the line of the outer mote has long since been effaced by the plough."

² Watson, *Place-Names of Ross and Cromarty*, as cited.

³ *per integras firmas ville de Dunscaithe cum le fery ejusdem: unacum passagio aque de Crombathy* (*Exchequer Rolls*, vol. vi. pp. 216, 463, 465, etc.; vii. pp. 126, 129, 356, etc.).

⁴ Known as "Cromall Mount," but in the popular version as "Cromwell's Mount."

⁵ See Stevenson, *Doct's. Illust. History of Scotland*, vol. i. p. 184.

⁶ See *Accts. Lord High Treasurer*, vol. i. pp. 324-5, 363; vol. ii. p. 125.

⁷ *Reg. Privy Council*, vol. iv. p. 750.

⁸ *Tours in Scotland, 1677 and 1681*. Ed. P. Hume Brown.

on the opposite side of the Firth a tiny sheriffdom was carved out of what is now known as the Black Isle, with the appropriate accompaniments of a royal castle and a royal burgh. The earliest mention of this sheriffdom of Cromarty is in a charter of some time between 1252 and 1272 granted by the sheriff William de Monte Alto.¹ The Monte Altos or Mowats continued as heritable sheriffs till the sheriffdom in a confusing transaction is found under the superiority of the Earl of Ross, and Earl William conferred it upon Adam Urquhart, who, in a confirmation by King David II in 1364, is specified as holding the sheriffship which Earl William resigned.² The earliest mention of Adam de Urquhart is in a charter from William, Earl of Ross, in 1338.³

The Urquharts continued in possession for about three and a half centuries. In that time, however, two things of importance had happened. In 1470 King James III made over to Sir William Urquhart and heirs the Mote and Mansion Mound of Cromarty in perpetual fee and heritage to be held as freely as their possessions in burgage in the burgh, with licence to build a tower or fortalice on the Mote and equip it with suitable defences.⁴ The implication is obvious. The castle was no longer to be counted as royal: it had been made private property, a fact which strangely seems to have been forgotten, since in 1748, following on the Act abolishing heritable jurisdictions, a claim was entered by William Urquhart as sheriff for compensation for loss of the constableness of Cromarty Castle, and the Lord Advocate had to point out that the castle had ceased to be royal, having become "the private property of the claimant's authors . . . many years ago," as appeared "by the writings produced."⁵

The other incident is that in 1670 the sheriff, Sir John Urquhart, managed to secure the transfer of all the burgh lands to himself. His son, however, beset with the chronic financial embarrassments of the Urquharts, was, under legal process, dispossessed of his Cromarty lands by Sir George Mackenzie of Tarbat, afterwards Earl of Cromarty, who placed his son Kenneth there. Then Sir Kenneth's son, in a state of bankruptcy, sold the property to William Urquhart of Meldrum, Aberdeenshire, the descendant of a cadet branch of the Urquhart family, who was to be the claimant of compensation for the long-lapsed constableness of the castle. Meldrum's son sold Cromarty in 1763 to Lord Elibank, who, nine years later, disposed of the estate to George Ross of Pitkerrie, a minor Ross-shire laird who had made "an immense fortune in England as an

¹ *Earls of Cromartie*, Sir Wm. Fraser, vol. ii. pp. 445-6.

² Robertson's *Index of Charters*, p. 45, No. 27; *Reg. Mag. Sig.*, vol. i. App. 2, No. 1254.

³ Macfarlane's *Genealogical Collections*, vol. ii. p. 376; *History of the Family of Urquhart*, Henrietta Tayler, pp. 7, 9.

⁴ Macfarlane, as cited, vol. ii. p. 375: *Ue Mote & Montem Mansionis de Cromathy*. There are some misreadings in this copy of the charter.

⁵ See *Claims under Act, etc.*, in General Register House, Edinburgh.

army agent."¹ Among the extensive improvements which "the Scotch agent" carried through on his new estate was the removal of the deserted old castle in 1772,² after which he built near by on the commanding site a mansion of the period.

Later writers interested in the castle as the home of Sir Thomas Urquhart, translator of Rabelais, had to borrow their descriptive notices from the accounts of old people who had seen it, as reported by Hugh Miller.³ It was thus learned that this castle had stood in an angle of the hundred-foot escarpment immediately behind the town, occupying in fact, as we now know, the site of an earlier mote-castle.⁴ From the base of the escarpment what was once the causewayed High Street ran to the sea, and hereabouts stood the old market cross.⁵ One of the annual fairs granted to the burgh was "St Norman's market," but there was no saint called Norman, and the name simply associates the existence of the market with the Norman sheriff.⁶ The later substitute for the mote-castle rose, we are told, "in some places to the height of six storeys, battlemented at the top, and roofed with grey stone," but with an extension from the main building only three storeys in height; that "one immense turret . . . occupied the extreme point of the angle," and there were "other turrets of smaller size"; while a "small court, flagged with stone," extended to a high outer wall with a gateway.

Broadly speaking, this description answers to the elevations and plans hitherto unknown and published here, with the original captions, for the first time. Unfortunately they bear no indicator of the cardinal points. It appears that by 1746 the castle was in need of repair and that some new building was contemplated. The drawings at this time (Pl. XII) show cracks on wall surfaces, which are indicated also on the floor-plans (Pl. XIII). Subsidence of the building is suggested, which may well have been the case if the tower had been erected upon the actual mote-hill, a result which is clearly seen in Duffus Castle a few miles north of Elgin.⁷

How far the repair, noted in the plans as begun in 1747, actually went, and whether the new buildings then projected were constructed, one cannot say. The "immense turret" at the angle of the eminence would seem, in the plan of 1747 (Pl. XIV, 2), to be scheduled for removal, but, as noted in the

¹ Tayler, as cited, p. 188; *Tales and Sketches*, Hugh Miller, p. 348.

² *Statistical Account*; Miller's *Scenes and Legends*, p. 80.

³ *Scenes and Legends*, pp. 78-82.

⁴ See p. 62.

⁵ *Scenes and Legends*, p. 453.

⁶ See p. 62; for the lay-out of the burgh cf. *The Scottish Burghs*, W. Mackay Mackenzie, pp. 58, 59.

⁷ The *Statistical Account* says that when the castle was pulled down, "Several urns composed of earthenware were dug out of the bank immediately around the building, with several coffins of stone. The urns were placed in square recesses formed of flags. . . . They were filled with ashes mixed with fragments of half-burned bones. The coffins contained human skeletons, some of which wanted the head."

traditional account, appears to have been still standing at the final destruction. In any case the plans, after the sale of the estate, found their way to Craigston Castle, on the only share of the Urquhart lands still in possession of one of the name, a junior branch of the Meldrum line¹; and to the kindness and co-operation of Major Bruce Urquhart of Craigston is due their reproduction here.

The castle of these drawings obviously followed on the grant and licence of 1470 to Sir William Urquhart, who, however, died in 1475.² According to the great Sir Thomas it was Sir William's grandson, Sir Thomas, who built the castle, which (of course) "exceeds any in this kingdom," in 1507, adding that it was "contrived by a French architect."³ There is no reason—allowing for the single characteristic of exaggeration—to doubt this statement: the place, with its crown of "pepperbox" turrets, does look more French than Scottish, when compared with towers of the latter class in the same century.

The building is in two parts of different dates (Pl. XII). The older tower rises in five storeys to a height of about 52 feet to the corbel course and 71 feet at the roof ridge. It is 43 feet long and 32 feet in depth, and is slightly L-shaped, having a "jam" or projection 10 feet deep at the south-west corner. Each of the six angles is surmounted by a small turret corbelled out from the wall-face and crossed by the double line of corbels that surrounds the tower below the crenellated parapet at the wall-head. These corbels, however, are placed chequer-wise, that is the lower course blocks the spaces between those above, and so, with nothing to support, are of no structural value, and, by blocking the interspaces which as "machicolation" would have given openings commanding in defence the foot of the wall, of no military value either. In fact a military provision has been converted into a purely architectural adornment.⁴ Other towers of the period showing the same adaptation are Rusco, Kirkcudbright, bearing the date 1514; Edzell, Perthshire; Craignethan, Lanarkshire; the tower on Little Cumbræ, etc. The crenellations on the parapet, too, look merely formal. The roof, traditionally of flagstones, has gables with "corbie" or "crow" steps, another sixteenth-century feature common in Scotland till the end of the eighteenth century and believed to have been imported from France or the Low Countries.⁵

The entrance to the tower is in the "jam," opening on an ample spiral stair with steps five feet wide, serving all floors and having

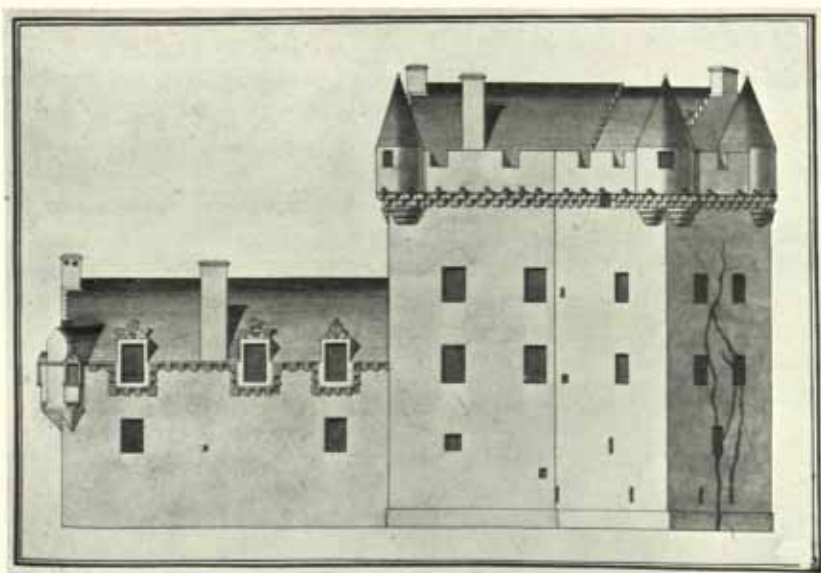
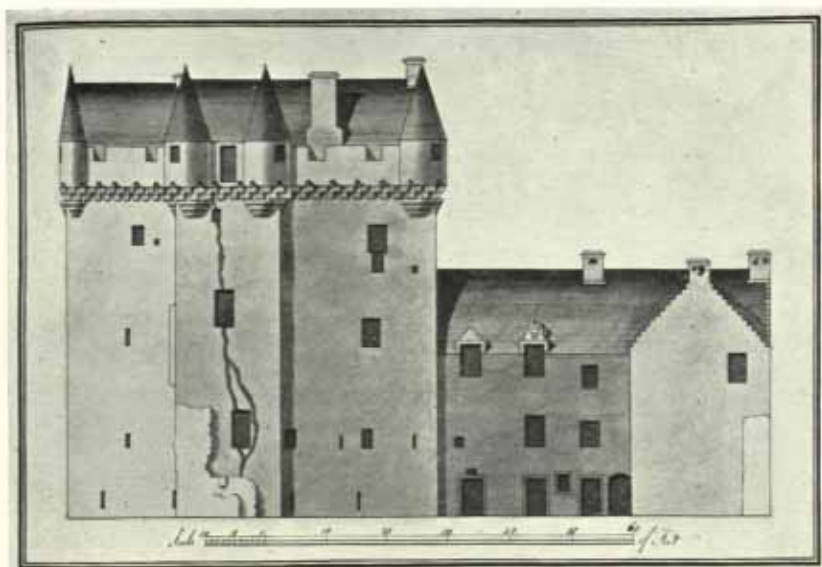
¹ *History of the Family of Urquhart*, Henrietta Tayler, p. 187.

² Tayler, as cited, p. 18.

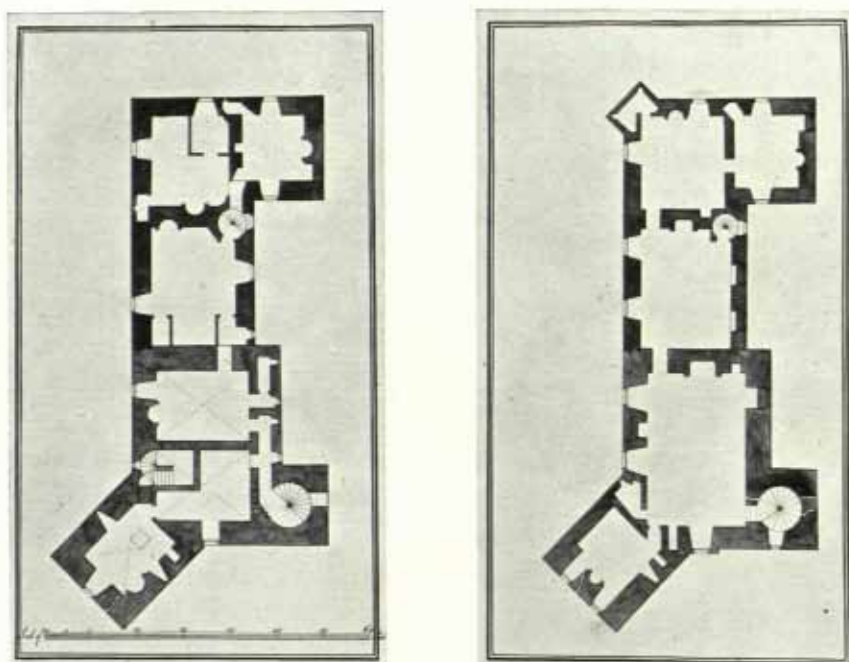
³ Quoted in Tayler, p. 22. Of course at this date only the tower is in question.

⁴ See *The Mediaeval Castle in Scotland*, W. Mackay Mackenzie, pp. 90-1; *Growth of the English House*, J. A. Gotch, p. 59.

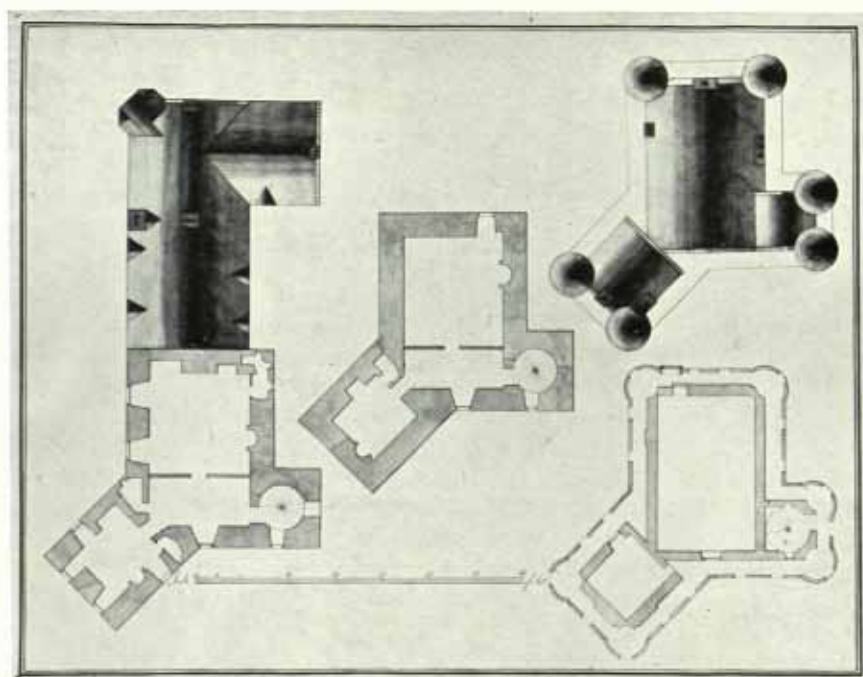
⁵ In England "probably due to the Flemings," being a feature of East Anglian brickwork but "seldom found elsewhere in England" (*A Short History of the Building Crafts*, Martin S. Briggs, pp. 56-7).



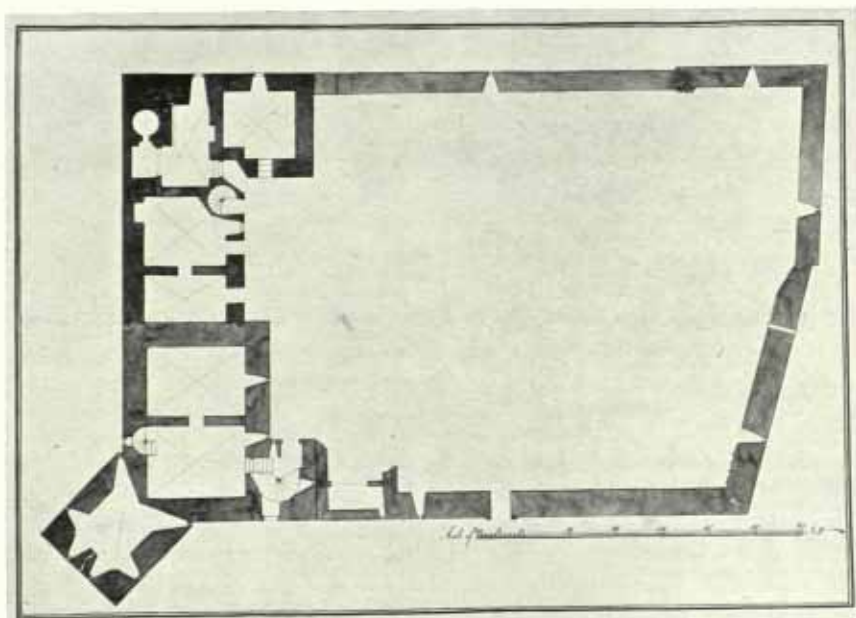
North and South Elevations of the Castle of Cromarty as it was in 1746.



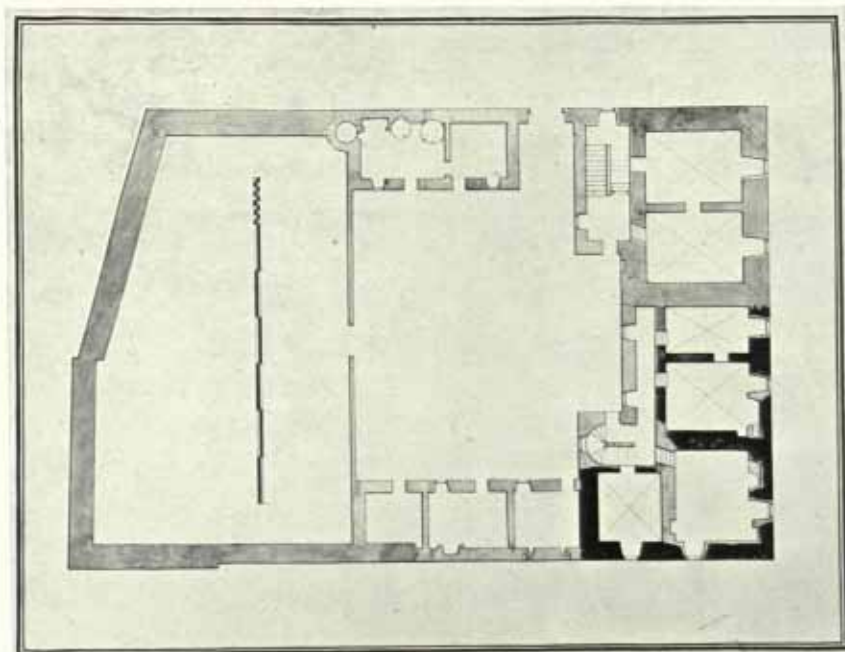
1. Plan of the 1st and 2nd Storys of the Castle of Cromarty as it was in 1746.



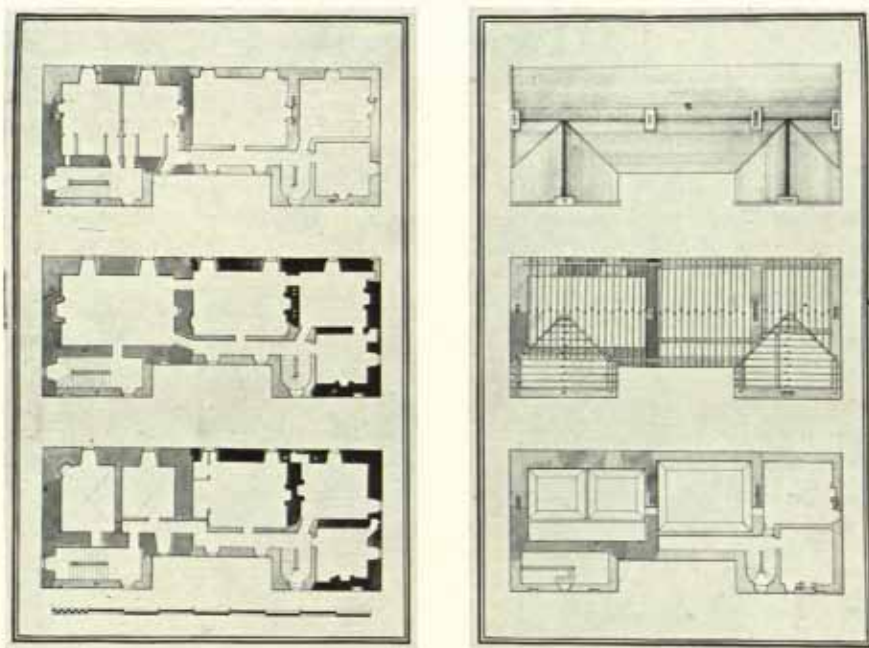
2. Plan of the 3rd, 4th and 5th Storys, and Roof, of the Castle of Cromarty as it was in 1746.



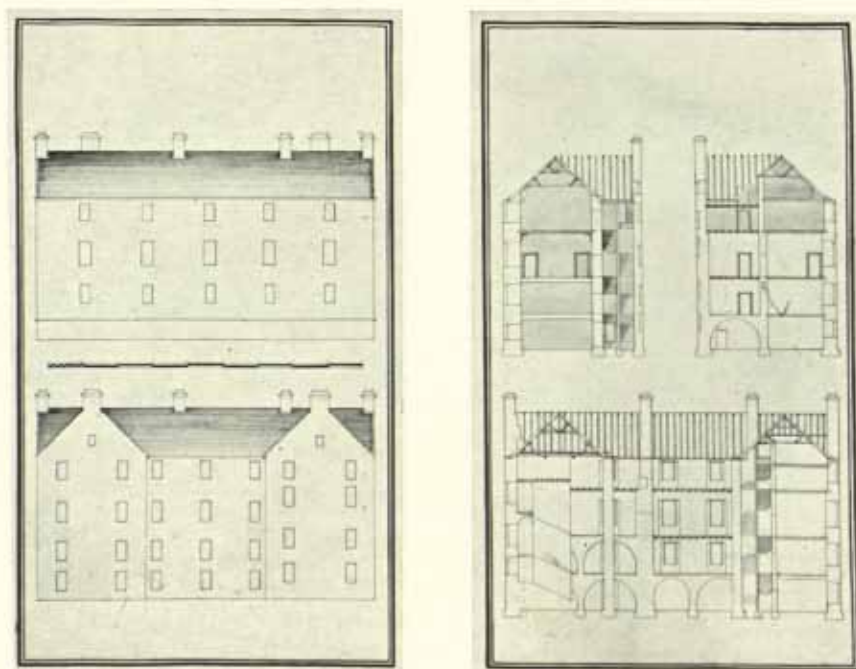
1. Plan of the Ground Story and Court of the Castle of Cromarty as it was in 1746.



2. Plan of the Ground Story and Court of the Castle of Cromarty as begun to be repaired in 1747.



1. Plan of the 1st, 2nd and 3rd Storys, Garretts, Section of the Roof and Roof of the Castle of Cromarty as begun to be repaired in 1747.



2. North and South Elevations and Sections of the Castle of Cromarty as begun to be repaired in 1747.

a straight flight down to the ground storey, which was partly below the surface and has two vaulted intercommunicating apartments, while the room in the great tower at the angle is also vaulted, but has no entrance from outside, being accessible only by the hatch in the room above. At this level the windows are only slits or very small: on the outer face is a plinth or basement course. On the first floor (Pl. XIII, 1) the main spiral stair opens on a corridor or lobby giving independent access to each of two rooms, which also are vaulted, and from one of which the vaulted apartment in the adjacent great turret is entered, while a small partitioned space has its own spiral and flight stairway from the room below, apparently leading to an entresol under the first-floor vault of the turret. In the east wall of the adjoining room is a recess the width of the corridor, having two small lights. The main spiral continues upwards but appears not to hit each level exactly; possibly the steps have been renewed.

In the turret room is a hatch which, as already said, is the only access to the room below. That, then, may be the "pit" or prison referred to later on.

Above the first floor there is no vaulting, and that, as well as the second floor, has communication with the later building (Pl. XIII, 1). The uninterrupted apartment on the second floor may, on that account, have been the hall of the tower, though its position as such is unusual. The fireplaces throughout are circular or rectangular, and there are several oddly shaped intramural closets, some of which at least may have been utilised for a sanitary purpose; while the two uppermost floors are also each subdivided by a partition. The plan at parapet level (Pl. XIII, 2) shows an opening from the main spiral stair to the parapet, also entrances from the parapet to the tower room and that in the great turret.

Sir Thomas Urquhart tells us that the builder of the tower "rode pompously with a retinue of 50 domesticks,"¹ and credits him in the Pedigree and elsewhere with a family of twenty-five sons and eleven daughters.² Urquhart of Cromarty had lands and mansions also in Banffshire and Aberdeenshire, but, unless there was other local provision, the assemblage of such a household must have taxed the accommodation of the Castle at Cromarty beyond its capacity. However, in 1631-32 the father of the great Sir Thomas was engaged in "building a house for his better accommodation," but could obtain timber for the purpose only in Norway, for the purchase of which he was empowered by the Privy Council to export "beir and meal."³ This is the lower house of urban type attached to the tower (Pl. XII) within the older precinct, as we see done rather earlier in Dirleton

¹ Tayler, p. 22.

² The traveller Richard Franck (see p. 67), in 1658, says thirty sons and ten daughters, "yet not one natural child amongst them (as I was told)."

³ *Reg. P.C.*, vol. iv. (New Series) p. 202.

Castle, East Lothian, and in Caerlaverock, Dumfriesshire, at about the same time.

Like the tower this house, too, is L-shaped, being fitted into the north-east corner of the enclosure. It is in three storeys, rising 27 feet to the wall-head (Pl. XII), where there is a corbel course returning round the dormer windows finished with pediments. Those on the outer face are ornamented with scrolls and vases, that to the extreme left having a floral finial, while the other two show finials of diamond shape.¹ The first of these encloses a shield bearing three boars' heads for Urquhart. The middle pediment displays the interlocked initials S.T.V. D.C.E. for Sir Thomas Urquhart, the builder, and his wife Dame Christian Elphinstone, while the remaining one bears on a shield a chevron between three boars' heads for Elphinstone. On the inner face one pediment is a blank, but the other has the initials D.C.E. above, for Dame Christian Elphinstone, whose arms, it may be inferred, occupied the somewhat obscure shield below.

The house, apart from the wing, measures overall 52 by 26 feet. The corner apartment was separately entered from the courtyard, was vaulted, and apparently was a kitchen with fireplace and oven (Pl. XIV, 1). The adjoining apartment in the wing was also independently entered and vaulted: both were partly underground. In the rest of the house the ground-floor rooms were also vaulted and each had its own entry, while a spiral stair gave access to the rooms above, in two of which partitions appear to have contrived smaller chambers. At the corner projected a balcony, rising to the attic, with its own roof and two windows (Pl. XII).

From this house probably came the two sculptured slabs already described in the *Proceedings*,² the larger and more important of which is now in the Museum here. At the time of the destruction this three-storeyed building was "so completely fallen into decay that the roof and all the floors had disappeared."³ This, with what has already been said of the apparent survival of the great turret,⁴ would seem to imply that the repairs as begun in 1747 were not carried to completion. They would surely have been good enough for another thirty years.

Whatever be the case, some important alterations were at least contemplated (Pls. XIV, 2, XV, 1). Access to the upper storeys was to be not by spiral staircases but by straight flights from a more roomy approach. The balcony, like the main turret, was to be removed. What is conjectured above to be the kitchen loses such features, and new windows are inserted

¹ The traditional description is therefore wrong when it says that the pediments "terminated above in two knobs fashioned into the rude semblance of thistles"; also in saying there are dates (*Scenes and Legends*, p. 80).

² Vol. 1926-27, pp. 181-91. "All the other sculptures of the castle, including several rude pieces of Gothic statuary, were destroyed by the workmen" (*Scenes and Legends*, p. 82).

³ *Scenes and Legends*, p. 79.

⁴ Page 63.

in this ground-floor suite of rooms. The entrance to the courtyard was to be widened. Apparently the architectural purpose of these alterations was to give greater symmetry to the front of the castle, a Georgian rather than a mediæval aspect.

The same idea affects the new houses contemplated against the walls of enclosure (Pls. XIV, 2, XV, 2), but these cannot be said for certain to have been erected. Apart from the vaulting shown the plans offer no special features.

Cromarty Castle played no particular part in national history except in so far as it was furnished with an English garrison for a short time during the Cromwellian occupation of Scotland. Apart from that its annals are wholly domestic.

The earliest note is that embodied in *Northern Memoirs* written in 1658 by Richard Franck, a Cromwellian trooper, who, with a companion, had made a journey through Scotland. At Cromarty he notes the "Laird Urquhart" with the large family, which so far corroborates what is claimed by Sir Thomas Urquhart in his notorious genealogy, and states that he "lived to the utmost limit and period of life¹; whose declining age," Franck continues, "invites him to contemplate mortality, and cruciate himself, by fancying his cradle his sepulchre, wherein he was lodg'd night after night, and hal'd up by pullies to the roof of his house; approaching as near as the roof would let him, to the beautiful battlements and suburbs of heaven."²

The only intimate connection on record of the great Sir Thomas Urquhart with the castle is how he and his brother Alexander, in December 1636, were guilty of confining their father from Monday to Friday "in sure firmance within ane upper chamber, callit the Inner Dortour [*i.e.* dormitory] within his place of Cromertie." The Court of Justiciary secured a reconciliation between father and sons, and Sir Thomas later wrote a handsome tribute to his extravagant parent.

Seven years later the Castle was the scene of a more tragic occurrence, which is related by a contemporary. On the first of February "Hutcheon Ross of Auchincloche" and two other gentlemen arrived at the Castle, "whair they war maid welcum, soupit mirrellie; but rekleslie gat ane collatioun whiche wes prepairit for ane uther, and wes all thrie found dead in there bedis on the morne. Pitifull to behold! It is said the young Laird of Calder wes merrit to Cromartie's dochter, who there efter becam mad, and of whome his young ladie had no plesour. Thus he being with hir in the place of Cromartie, this potioun wes in a quairt stoup provydit for him, bot fell utherwayes as ye heir; whereupon young Calder, be his friendis, wes haistillie removit out of that place, and nevir moir tryit."³

¹ 1474-1557, and so died at eighty-three.

² *Northern Memoirs, etc.*, published 1694; ed. 1821, p. 216.

³ Spalding's *Memorials of the Troubles*, vol. ii. pp. 228-9.

One other record adds something to our knowledge of the Castle. In 1676 we find a "kaird" or tinker accused before Sir John Urquhart of a varied series of crimes—"daily stealling of corne-stacks in 3 or 4 places"; breaking into two booths in Cromarty and stealing 20 merks from the one, "merchant waires" from the other; "Stealling the communione cup of the Kirk of Tarbet" and timber from the bulwark of Cromarty; coining false money "and making of ill half crowns by laying on them of quicksilver"; adultery, poisoning his wife and committing perjury about it. "For which crymes he was secured in the pit [prison] of the castell of Cromartie and on the 28th of May, being Sunday, made ane passadge throw the prison wall, being elleven feet thick, and made his escap, and stealed and away took ane pewter stoup and ane pair of blankets he had in the prison . . . brocht to the gallows at the Ness of Cromartie and hangit thereon be the neck to the death and his bodie cut down and intered at the gallows foott."¹

Eleven feet is a thickness of wall not to be found in any of the drawings.

The last occupants of the Castle were "an old female domestic and a little girl," and it was the latter, when over seventy, who could tell Hugh Miller "that two threshers could have plied their flails within the huge chimney of the kitchen; and that in the great hall, an immense dark chamber lined with oak, a party of a hundred men had exercised at the pike."²

V.

THE EXCAVATIONS AT CAIRNPAPPLE HILL, WEST LOTHIAN, 1947-48. BY STUART PIGGOTT, B.Litt., F.S.A., F.S.A.Scot., Professor of Prehistoric Archaeology in the University of Edinburgh.

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CONTENTS.

	PAGE
SUMMARY	69
INTRODUCTION :	
The Site and its Setting	70
Visible Structures before Excavation	72
Circumstances and Method of Excavation	74

¹ Tain court documents in *Old Ross-shire and Scotland* (W. Macgill, B.A.), vol. i., No. 245, p. 94.

² *Scenes and Legends*, p. 80.

EXCAVATIONS AT CAIRNPAPPLE HILL, WEST LOTHIAN. 69

DESCRIPTION:	PAGE
The Site as Revealed by the Excavations	
Period I.	76
Period II	
The Bank and Ditch	81
The Stone-holes	83
The Pits	86
The Hearths	88
The Graves	88
Period III	
The Cairn and Inner Kerb	92
The Cists	95
Period IV	98
The Cairn Enlargement and Outer Kerb	98
The Burials	99
Period V	100
The Finds	
Period I.	101
Period II	104
Period III	107
Period IV	108
The Stone-Robbing	111
DISCUSSION:	
Period I	112
Period II	114
Period III	115
Period IV	116
Period V	117
Evidence of Climatic Changes	118
TECHNICAL APPENDICES A-G	120

SUMMARY.

In Late Neolithic times, about 2000 B.C., a site was chosen for a sanctuary and cemetery on a hilltop overlooking the Firth of Forth six miles to the north, and within the 1000-foot contour. With stone axes manufactured in North Wales and in the Lake District an area of oak and hazel scrub was cleared on the summit, and an irregular arc of seven holes was dug, open to the west. In and near these a dozen deposits of cremated human bones were made. The builders and dedicators of this site are likely to have had affiliations with people in Yorkshire and further south in England.

Probably at this time, too, three very large stones were set up fronting the arc.

A century or two later the site was rededicated and remodelled as a monumental open-air temple on a large scale, and in a different religious tradition, though one well known in Early Bronze Age England. Twenty-six large stones were set up in an oval, enclosed within a rock-cut ditch with an external bank and entrances to north and south. Within the area a ceremonial burial was made at the foot of a standing-stone within a stone kerb and small cairn. Another burial was made beside one of the stones of the main oval setting on the east, and with both burials were pots of Beaker type.

By a date round about 1500 B.C. the sanctity of the site had been forgotten, except in so far that the hilltop was regarded as suitable for the burial of an alien Bronze Age chief. The old shrine was despoiled to make his tomb, and its stones taken down to form the great kerb of the circular cairn and its massive cists, one containing an inhumation with a food-vessel pot, the other a cremation.

Later again in the Bronze Age, about 1000 B.C. or so, burials were added to the tomb by enlarging the cairn to twice its size, burying the old kerb and spreading not only over many of the stone-holes of the earlier shrine but over its silted-up ditch as well. In this enlargement, which had its own stone kerb, were two burials by cremation beneath inverted Bronze Age urns.

Perhaps it was in the Iron Age, in the first century or so A.D., that four burials at full length were made within the ditched area to the east: if they are of this date, the site would have preserved something of its ancient sanctity for some two thousand years.

Ineffectual attempts to plunder the cairn for treasure or stone were made in medieval times, early in the seventeenth century, and again about a century ago, and an octagonal turf dyke to enclose a hilltop plantation of trees was made over the site at about the same time.

INTRODUCTION.

The Site and its Setting (fig. 1).

The site described in the following report lies on the rounded summit of Cairnpapple Hill, itself part of the high broken country known as the Bathgate Hills, and lying some fifteen miles west of Edinburgh. These hills rise in places to a height of just over 1000 feet, and The Knock, half a mile south-east of Cairnpapple Hill, forms, with its abrupt slopes, a well-known local landmark. Geologically, the hills consist in the main of basalt lava flows of the Hillhouse type interbedded with Lower Carboniferous

sediments (sandstone, shales and limestones), and much of the area is covered with boulder clay, though the crests of the hills are now normally free.¹ Much of the Bathgate Hills are under plough, but there are considerable areas of rough grazing and woodland. Cairnpapple Hill was itself largely covered by a plantation of trees until the early 1920's, when it was cut down, and it was certainly wooded in 1852.² At the time of the present excavations the hill had reverted to rough pasture, with coarse tussocky grass and clumps of blueberries over most of the site.

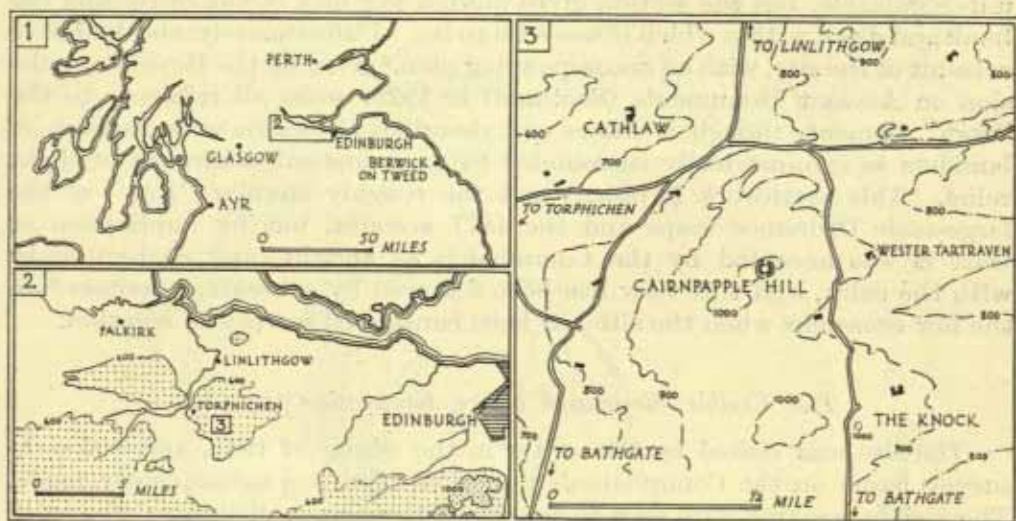


Fig. 1. Location maps of site.

The view from Cairnpapple Hill is very remarkable. Northwards one looks across the estuary of the Forth, six miles away, to the Ochil Hills, with the summit of Schiehallion visible beyond them on clear days; southwards the view is bounded by the Pentland and Moorfoot Hills. To the east, North Berwick Law and the Bass Rock mark the entrance to the Firth of Forth, while in exceptionally clear circumstances Goat Fell in the Isle of Arran can be sighted to the west.

It is the prehistoric site under discussion that gave its name to the hill. As is usual with Scottish place-names, very early forms are lacking, but the form *Kernepopple* (1619) suggests a hybrid name from Gael. *carn* and O.E. *popel*, meaning a cairn of loose stones or pebbles: the present form

¹ Mr F. W. Anderson, of the Geological Survey, very kindly made reports on the local geological problems of Cairnpapple in 1947 and 1948: his report in its final form is printed as Appendix A below.

² In July 1852 Mr Charles Cowan and a friend "walked to the top of a hill (wooded) to look at traces of an ancient fort, but Harvey and I could see nothing defined or remarkable, so we enjoyed the landscape." The "fort" was the Cairnpapple site (*Proc. Soc. Ant. Scot.*, vol. xii. (1877), p. 408).

of the name was established at least by the end of the eighteenth century.¹ A grass-grown cairn with a ring of boulders at its foot was the most conspicuous feature on the hilltop before excavation, but there were other earthworks present that had caused the site to make frequent appearances in the older antiquarian literature, and on maps, as a "fort." It is dismissed as a "so-called British fort" in its first mention in the *Proceedings* in 1877, already quoted in connection with an earlier mention there cited, and there is a sketch-plan and section of the site published: the plan is unrecognisable, but the section gives quite a fair idea of the cairn, and the bank and ditch within which it was seen to lie. Unfortunately, the definitive account of the site, with an accompanying plan,² given by the Royal Commission on Ancient Monuments (Scotland) in 1929, omits all reference to the "fort" element, though it shows and describes the cairn with its kerb of boulders as symmetrically surrounded by an octagonal earthwork of slight relief. This earthwork is clearly not the roughly circular "fort" of the large-scale Ordnance maps and the 1877 account, but by implication at least it was accepted by the Commission as ancient, and contemporary with the cairn, and this view has been followed by subsequent writers³ on the few occasions when the site has been considered worthy of mention.

The Visible Structures before Excavation (fig. 2).

The site was visited by the writer in the winter of 1946, and a sketch-survey based on the Commission's published plan was subsequently made. The visible remains were seen to consist of three main elements: the cairn itself, a large roughly circular earthwork consisting of a wide shallow ditch with external bank (the "fort" of earlier accounts), and the octagonal bank and ditch, of very slight proportions. It was not difficult to determine that this octagon was the latest feature of the site, as it cut through the circular earthworks, which lay partly within and partly outside its circuit, though it was accurately centred on the cairn. It had all the appearance of a hedge-bank or turf dyke of the type so often found surrounding hilltop clumps of trees in England and Scotland, and there seems every reason to assign it to such an origin. Such "fail dykes" were already being constructed to protect young plantations by the "Improvers" in the Scottish Lowlands from the middle of the eighteenth century onwards,⁴ and a star-shaped enclosure, not at all dissimilar to the Cairnpaple octagon, surrounds

¹ Angus Macdonald, *The Place-Names of West Lothian* (1941), p. 3. The local dialect pronunciation of the name at the present day is *cairniepapple*.

² *Inventory of the Monuments of West Lothian* (1929), No. 386.

³ Such as V. G. Childe, *Prehistory of Scotland* (1935), p. 110.

⁴ The Rev. P. H. R. Mackay of Torphichen has drawn my attention to the very apposite description of such dykes in the letters of Cockburn of Ormiston, one of the most famous of the "improving" landlords, in 1727-44 (*Letters of Cockburn of Ormiston*, ed. Scottish History Society, vol. 45 (1904)).

a cairn and a now vanished plantation at Andrews Knowe, Hownam, Roxburghshire.¹ We need not therefore concern ourselves with this feature at Cairnpapple, save to dismiss it as of recent origin.

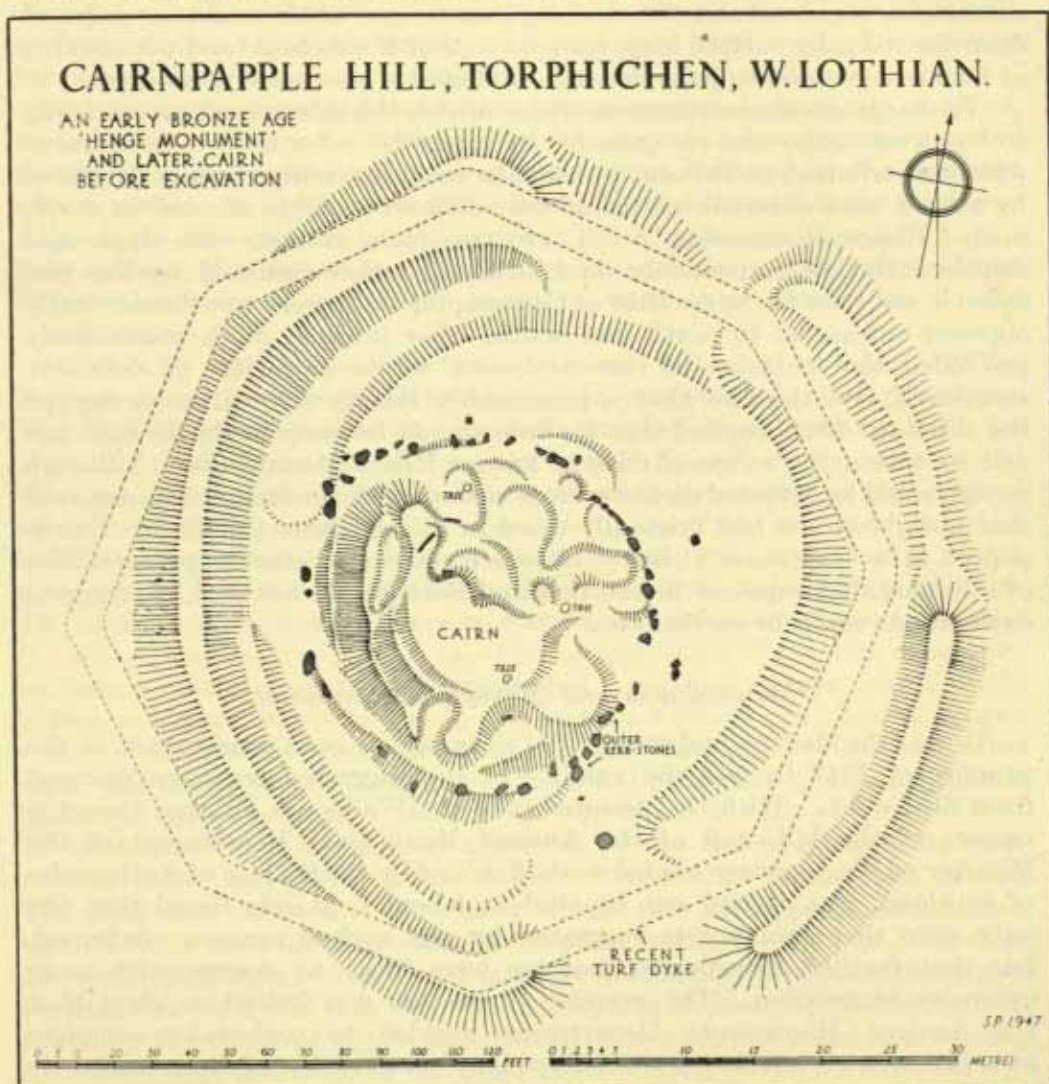


Fig. 2.

It could be seen that the cairn had been extensively robbed and dug into, and a small area to the south-west alone appeared to retain the original profile: furthermore, there were three trees still growing upon it. Round

¹ I am indebted to Dr K. A. Steer for drawing my attention to this Roxburghshire example.

its base was a conspicuous irregular circle of boulders forming a rough kerb, and on the west it appeared that this kerb, and the outer skirts of the cairn, overlapped the line of the shallow ditch of the large circular earthwork, and was therefore subsequent to it. Little could be deduced from the cairn by surface inspection, save that it was large and presumably of Bronze Age date, to judge by such analogies as presented themselves.

The large circular earthwork, within which the cairn stood eccentrically to the westwards, was recognisable as a member of a class of monument widely distributed in Britain, in which a roughly circular area is delimited by a ditch with external bank, and may contain uprights of stone or wood. Such "Henge Monuments"¹ fall into two main groups, with single and double entrances respectively, and although rather confused by the turf dyke, it was possible to see that at Cairnpapple there were two diametrically opposed entrances, to north and south. The internal ditch immediately precluded the inclusion of the earthwork within any class of defensive structures, and the fact that a presumably Bronze Age cairn overlapped the silted-up ditch implied that its date should be early in the Bronze Age and so within the range of date of known Henge Monuments. Although no sign could be detected on the present surface of the ground, it was assumed that upright stones had originally stood in a ring within the ditch. Cairnpapple, in fact, appeared to have in its cairn and earthworks the potentialities of a remarkable sequence in the Lowland Scottish Bronze Age, if adequate excavations could be carried out.

Circumstances and Method of Excavation.

It was decided to undertake trial excavations on a small scale in the summer of 1947 to test the validity of the suggested sequence deduced from field-work. With the permission of the Wallhouse Estates, then the owners of the hill, and of the Ancient Monuments Department of the Ministry of Works, three weeks' work, financed by the Society of Antiquaries of Scotland, was carried out by student labour.² It was found that not only were the main points suggested by the surface remains confirmed, but that further unsuspected features were likely to emerge with more extensive excavation. The promise of the site was indeed so great that the Ancient Monuments Department decided to undertake complete excavation with a view to the subsequent preservation of the remains as

¹ For a full discussion of these monuments, see R. J. C. Atkinson and C. M. Piggott, *Excavations at Dorchester, Oxon* (Ashmolean Museum, 1950).

² Thanks are due to the twenty-odd students, representing the Universities of Oxford, Cambridge, London, Edinburgh, Glasgow and Uppsala, who worked at Cairnpapple in 1947-48 with such cheerful vigour despite the usually bad weather. I should like particularly to thank Mr P. Curnow and Mr P. R. Ritchie, who in 1947 and 1948 respectively acted as my chief assistants in survey, photography and other technical aspects of the excavation. A short report on the 1947 results was published in *Antiquity*, vol. xxii (1948), p. 35.

a monument under guardianship. An area on the hilltop including the cairn and earthworks was acquired at the sale of the Wallhouse Estates, and in the summer of 1948 the systematic excavation of the entire site was carried out under the writer's direction, with the results described in this report.¹ Subsequently the area has been taken in hand by the Department for conservation and preservation, with provision for public access, etc.

At the beginning of the work, the site was surveyed on a scale of 1 inch to 10 feet (1 : 120), and a grid laid out based on two co-ordinates running on the magnetic north-south and east-west lines, crossing at the apparent centre of the cairn. The area of the Henge Monument within the ditch was stripped to the solid rock in a series of rectangular cuttings within this grid system, the corners making convenient reference points for survey. Stone-holes and other features revealed were then plotted on to the 1 : 120 survey.

The cairn was excavated in four quadrants, following normal procedure in such sites, thus obtaining two complete cross-sections at right angles. The 1947 trial trench into the cairn had revealed the existence of an inner kerb of half the diameter of the outer visible ring of stones, which could then be interpreted as the boundary of an enlargement to the original structure. For convenience of excavation, therefore, this cairn enlargement was first removed in four quadrants, leaving the original cairn within its concealed kerb to be dealt with, again in quadrants, as a separate problem. The entire area covered by the cairn was planned to a scale of 1 inch to 4 feet (1 : 48) on four separate sheets, one to each quadrant, which were completed in rotation as the excavation progressed. Sections of the cairn, ditch-silting, etc. were drawn to a scale of 1 inch to 2 feet (1 : 24), and plans and sections of all stone-holes were made to the same scale.² All excavated earth and stones were wheel-barrowed out to beyond the Henge Monument bank: all earth-fast stones, etc. were of course left *in situ*.

Within the area enclosed by the ditch of the Henge Monument, excavations were everywhere carried down to the surface of the rock subsoil. The Hillhouse basalt was over most of the area decomposed and rotten, though there were areas of compact or platy basalt to the west. Even in the rotten basalt, however, it was possible to identify disturbed areas representing stone-holes or pits with ease: irregular hollows in the old surface, probably the result of the former growth of trees, were found sporadically over the whole site. Under the inner (Food-vessel) cairn of Period III was a layer of naturally deposited brown clay, and similar clay was preserved

¹ The initiative and subsequent official organisation of this project was taken by Dr J. S. Richardson, at that time Inspector of Ancient Monuments for Scotland, and it is pleasant to have this opportunity of making a formal expression of gratitude to him for his energetic co-operation throughout the work.

² The main plan is here reduced to 1 : 240 (fig. 3); Area A (the cairn) to 1 : 96 (fig. 5), and the main sections to 1 : 48 (figs. 6 and 11). The original surveys, etc. of the site have been deposited with the Society of Antiquaries of Scotland.

under the bank of the Henge Monument (Period II).¹ It did not, however, occur beneath the cairn enlargement (Period IV), nor over the exposed area of the Henge Monument, where the rock was often less than a foot beneath the present surface. The significance of this clay in relation to possible climatic changes is discussed below (p. 118), and Mr Anderson noted that although the summit of Cairnpapple Hill was free of clay, both on the east and on the west of the Monument the natural clay capping comes to within a hundred feet or so of the limits of the site.

DESCRIPTION.

The Site as Revealed by the Excavations (fig. 3).

The tentative result of the 1946 field-work had been to suggest a two-period site, but at the close of the excavations five main periods² of construction could be distinguished, which may be listed as follows:—

- Period I. A stone setting and cremation-cemetery of Late Neolithic date, c. 2000 B.C.
- Period II. The Henge Monument, consisting of a "circle" of standing-stones with ceremonial burials in association, and an encircling ditch with external bank, having two opposed entrances. Of Beaker date, probably c. 1700 B.C.
- Period III. The primary cairn, containing two cist-burials, one an inhumation with a Food-vessel, and the other a cremation. Of Middle Bronze Age date, probably c. 1500.
- Period IV. The secondary cairn enlargement, with two cremated burials in inverted cinerary urns. Of final Middle Bronze Age or native Late Bronze Age date, probably c. 1000 B.C.
- Period V. Four graves for extended inhumations, grouped together within the Henge area to the east. Undated, but possibly Early Iron Age within the first couple of centuries A.D.³

Period I.

The earliest structure on the site was represented by seven holes dug in the rock, similar in appearance to sockets for small standing-stones, near the centre of the Henge area and underlying the Period IV cairn enlargement. Details of these holes are given in tabular form on p. 79: they ranged in depth from 1 foot 9 inches to 7 inches below the rock surface, and are lettered

¹ For analyses of these clay layers see Appendix B.

² I use the word "period" advisedly, rather than "phase" as in earlier reports, as distinct archaeological culture-periods are involved, and not merely modifications of the site within one such period. The block of fig. 3 was made before the adoption of this nomenclature.

³ A short account of the excavations embodying these results was published in *Antiquity*, vol. xxiii. (1949), pp. 32-9.

CAIRNPAPPLE HILL EXCAVATIONS 1947-48

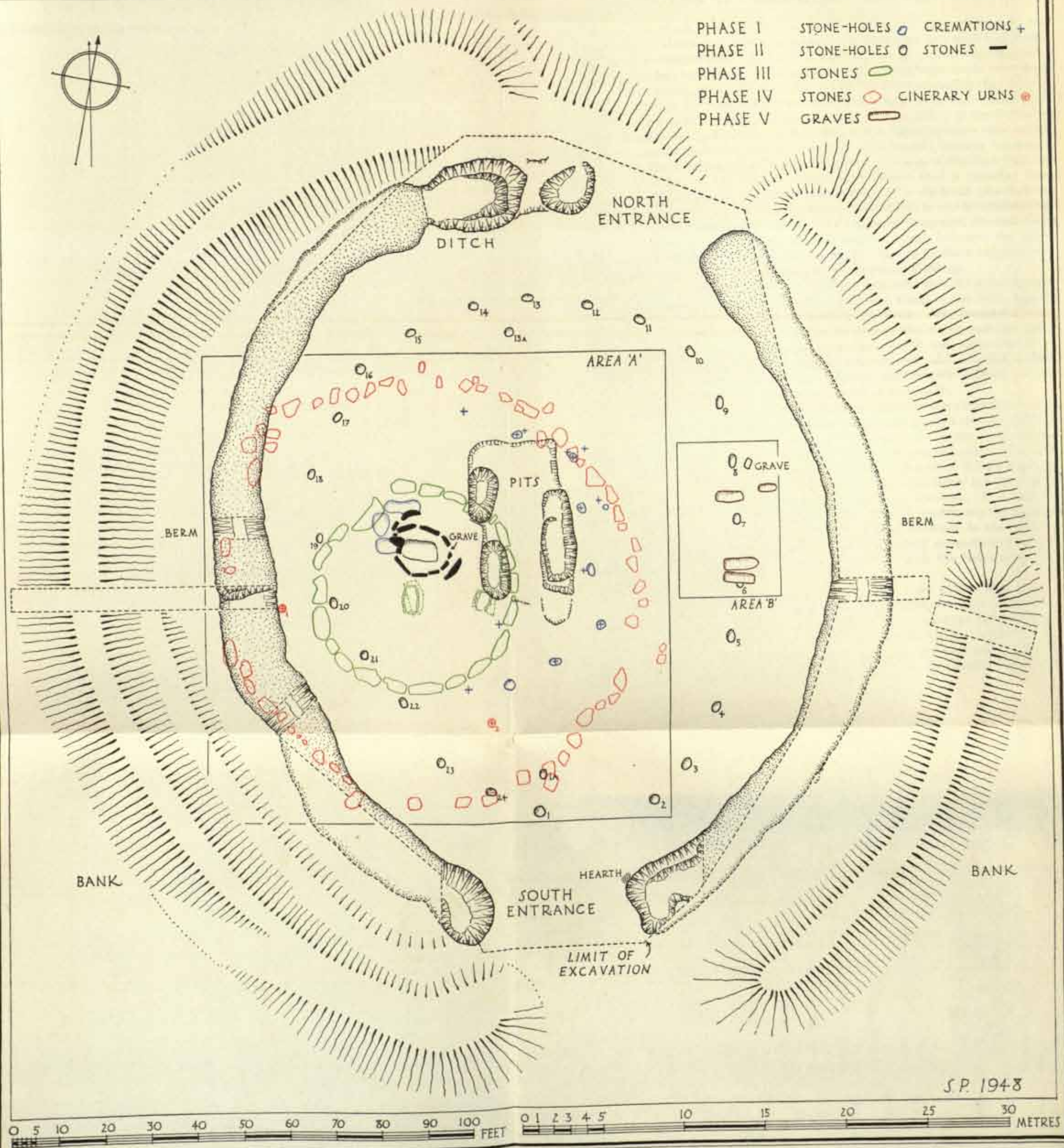


Fig. 3. (For Area A see 5; for Area B, Fig. 8.)

CAIRNPAPPLE HILL EXCAVATIONS 1947-48

PHASE I
PHASE II
PHASE III
PHASE IV
PHASE V
DITCH
ENTRANCE



ENTRANCE
DITCH

AREA X

AREA

AREA

ENTRANCE
DITCH

AREA

0 10 20 30 40 50 60 70 80 90 100
Feet

Map of Cairnpaple Hill Excavations 1947-48

A-G on the plans. An additional shallow hole (X) may belong to the same series. Holes A-G were arranged in an irregular arc, with C-F forming almost a straight line; B, D and E were oval in plan, and the remainder roughly circular, and the largest stone they could have held would have been about 2 feet thick, while the majority would have been smaller (fig. 4).

The evidence for suggesting that these holes may have been stone-holes is partly their close similarity to the undoubted stone-holes of the Period II Henge Monument, and partly the fact that in the filling of most were stones similar to packing-stones, and in C and D were freshly broken fragments suggesting the breaking-up of a stone *in situ*. In view of the fact that the 1949 excavations at Dorchester (Oxon) have shown that a peculiar form of Late Neolithic sacred structure may consist of a circle of pits holding neither posts nor stones, we must however be cautious in our interpretation. The plan of the Cairnpapple setting was curiously irregular, though there was an approximately equal spacing of about 11 feet between the holes. The stony rubble filling of the holes gave no clue as to their original use, nor whether they had been naturally or deliberately filled up.

In or beside every hole except A (and the doubtful hole X) were deposits of cremated human bones, either actually in the filling of the hole, against its side, or in a separate shallow scooping in the rock. The cremated bones were in an extremely finely broken state, and in the damp soil had often become reduced to greyish-white pasty smears, but it was clear that in no instance was a complete human skeleton represented, and in most, a mere handful of cremated bones, almost certainly deliberately broken to tiny fragments before deposition, had been placed in the earth.

In addition to these cremated deposits directly associated with the holes, five further cremations were found on the old ground surface immediately above the rock or, in the case of C. 1 and C. 2, on the clay capping preserved under the cairn of Period III, and in the general area of the holes A-G. Most of these were incomplete, though C. 2 and C. 5 had a greater quantity of bone fragments than the others, and the latter lay on a stone slab with another stone at right angles against it on the east. C. 1 and C. 5 lay at 10 and 12 feet respectively from holes A and G, continuing the approximate line of the arc-like plan, and in the lack of evidence to the contrary it seems reasonable to assume that the five detached cremations are to be taken with the eight deposits directly associated with the holes as a single cremation-cemetery (fig. 5).

The direct stratigraphical evidence of date only places the holes as earlier than Period IV (the construction of the enlarged cairn), by which date the stones (if they held them) had been removed and the holes probably deliberately filled in. But of the detached cremations, C. 1 and C. 2 were partly scattered on the clay surface beneath the kerb of the Period III cairn, so that they at least should be earlier than the Food-vessel burial

in that cairn, and if they are accepted as broadly contemporary with the remainder of the cremated bone deposits, the whole complex of holes and cremations would be earlier than Period III. This would still leave the question open as to whether they were earlier or later than, or contemporary with, the Henge Monument of Period II.

Fortunately there is additional evidence from the site. With the cremation from hole C were the burnt fragments of a pin of bone or antler, finely made and with a simple rounded, subconical head, and from the detached cremation C. 1 came a single fragment of the shaft of another similar pin. The significance of this type of pin is discussed in greater detail below, and it is sufficient here to note that it has been found associated with multiple cremation-burials of Late Neolithic, pre-Beaker date in many sites in England, ranging from Wiltshire to the East Riding of Yorkshire. At certain of these sites (such as Stonehenge and Dorchester-on-Thames) the pins come from cremation-cemeteries associated with sacred structures or enclosures embodying circles of pits of unknown ritual purpose. The arc-like setting at Cairnpapple, while without direct parallel, seems likely to fall within the general class of such monuments. The holes and cremation-cemetery should therefore be of an earlier date than the Beaker period, and so at Cairnpapple come before the Henge Monument and constitute a Period I.

In addition to the holes A-G, three very large holes immediately to the west and north of the North Grave, and beneath the food-vessel cairn of Period III, must be considered here. Although no distinctive packing-stones occurred in the earth and rubble filling of these holes, they seem probably explicable as stone-holes once containing massive uprights. They averaged 2 feet in depth, and that to the north was nearly 8 feet long by 2-3 feet across. Stratigraphically it was clear that these holes, with any stones they may have contained by then removed, were buried beneath the Period III cairn and so antedated its construction. Furthermore, at the eastern end of the southern hole was a standing-stone filling less than half the hole and so presumably a later insertion: if the hole had held a stone it would by then have been removed. At the foot of this standing-stone was a burial (the North Grave) of the Beaker period, and so more or less contemporary with the Henge Monument of Period II.

The implication is that the three large holes represent a monument earlier than Period II, and therefore likely to be contemporary with the holes A-G and the cremation-cemetery of Period I. Parallels for three-stone monuments can be cited from Wiltshire and Somerset (Avebury and Stanton Drew), and probably within the Henge Monument of Arbor Low in Derbyshire: the curious designation of "Cove," given to the Wessex examples by the eighteenth-century antiquary William Stukeley, may be used for convenience and in the want of a better concise term. These affinities are discussed below, but for the present one must point out that at Cairnpapple

the "Cove" could belong to a phase of Period II earlier than the construction of the North Grave, though the three stones (if they existed) would then have stood rather eccentrically to the main lay-out of the Henge Monument and not approximately centrally, like the comparable stones at Arbor Low.

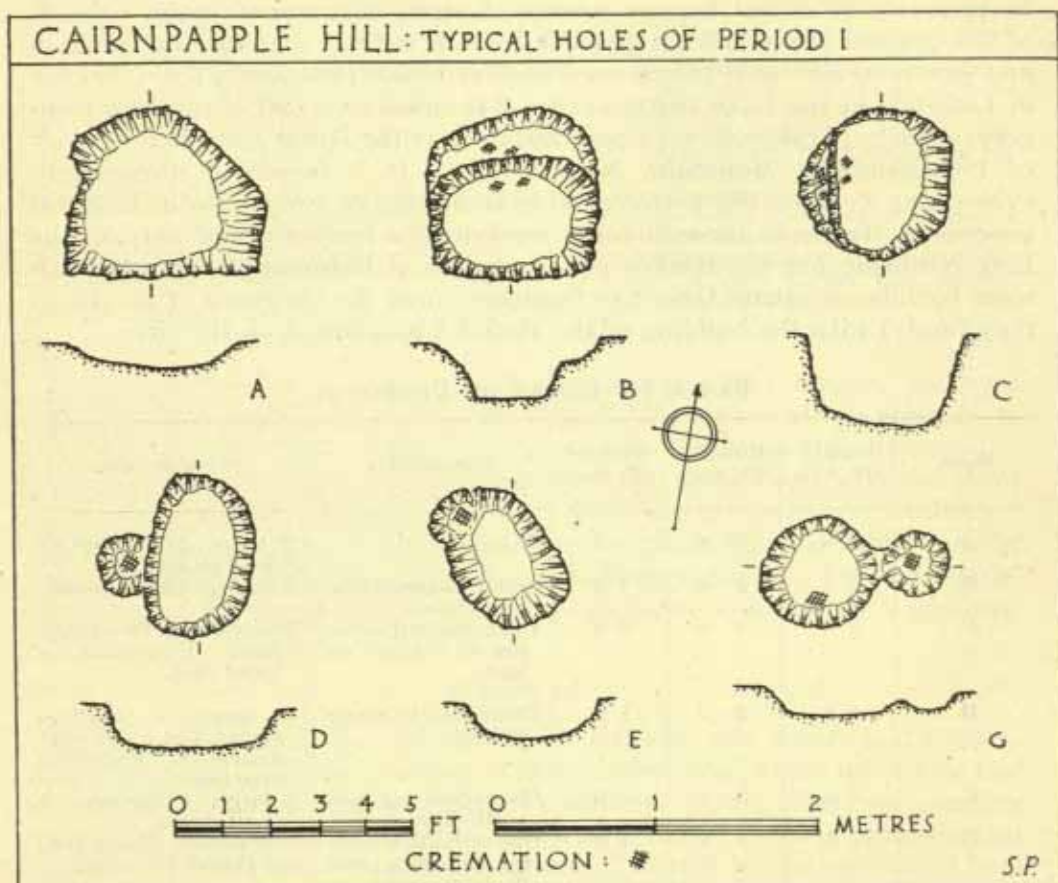


Fig. 4.

Certain small finds mainly from the old surface beneath the Period III cairn should be taken into consideration at this point, though their direct association with the Period I structures is not proven. The most significant of these are fragments of the cutting edges of two stone axes, one found immediately outside the Period III kerb on the west, and the other between Cists A and B within the cairn. Both fragments appear to have been broken from the edges of axes when in actual use, and this is especially clear in No. 2, which is a flake which has spalled back from the cutting edge and shows a marked bulb of percussion. The inference is that stone axes

were in use to clear the site of undergrowth or woodland in Period I or later. But it is possible to fix the date of the axes with more precision than a vague attribution to Neolithic or Early Bronze Age times.

Both fragments have been petrologically examined¹ and both found to be products of actual known centres of stone axe manufacture. No. 1, of fine-grained flinty-looking greenish rock, is exactly matched by the axes and raw material from the factory sites at Stake Pass and Pike o' Stickle in Langdale in the Lake District; No. 2 is equally typical of the brownish-grey, slightly porphyritic rock matched only at the Graig Lwyd axe-factory of Penmaenmawr Mountain, North Wales. It is becoming increasingly evident, as work on the petrological examination of stone axes in England progresses, that both these factories worked for a limited period only, in the Late Neolithic but pre-Beaker period, and so at Cairnpapple we may with some confidence equate these axe fragments (and the clearance of woodland they imply) with the building of the Period I monument on the site.

TABLE I.—HOLES OF PERIOD I.

Hole.	Length (ft. in.).	Breadth (ft. in.).	Depth * (ft. in.).	Cremations.	Other details.
A	4 0	3 6	7	None.	2 large, 3 medium, 2 small stones.
B	3 4	2 6	1 4	Small fragments on north side.	3 large, 2 small stones.
C	3 0	3 0	1 9	Cremation with bone pin on "shelf" on east.	Few stones. Two pieces split. Fragments of burnt flint.
D	3 4	2 2	1 0	Cremation in scoop to west.	4 large, 2 medium stones, and many split fragments. Flat stone over hole.
E	3 0	2 4	9	Cremation against north-west corner.	4 large, 4 medium, 4 small stones.
F	3 6	3 4	1 0	One cremation scattered in filling; one in large scoop to north-west.	Few stones. Under kerb of Period IV cairn.
G	3 0	2 6	8	One cremation in hole against south edge; one in scoop to east.	No stones.
X	2 0	2 0	4	None.	
Cove N.	7 8	3 10	2 3	None.	No stones.
Cove Centre	5 0	4 0	1 8	None.	No stones.
Cove S.	5 8	3 10	2 0	None.	No stones. Original length not known.

¹ I am greatly indebted to Dr F. S. Wallis of Bristol Museum for undertaking this work, with the co-operation of the South-Western Museum's Sub-Committee for the Petrological Examination of Stone Implements. Dr Wallis's report is printed as Appendix E.

* Throughout this report depths are given below the solid rock surface.

TABLE II.—DETACHED CREMATIONS OF PERIOD I.
(See also Appendix C.)

Cremation.	Location.	Comment.
1	Under and outside Period III kerb on south-south-east.	Fragmentary; scattered sparsely on old surface. Fragment of bone pin in association.
2	Under and inside Period III kerb on east.	Probably complete. Main bulk within kerb, but scatter on old surface extending outside.
3	North-east of hole E.	Fragmentary.
4	North-east of hole F.	Very small quantity of cremated bone fragments.
5	West of hole G.	Perhaps complete. On small flat slab with similar slab upright against east side.

Two sherds of pottery may also be considered in this context, one from the old surface near the centre of the Period III cairn, and the other from the filling of the North Grave of Period II. Both are of undecorated brownish ware, the first being probably part of a small bowl, and the other having a low circular unperforated lug. Both are presumably "Neolithic" in a broad sense, and the lugged sherd from the grave-filling should be earlier than, or roughly contemporary with, the Beaker period. On the whole, however, the sherds seem likely to be contemporary with the axe fragments, and fall within Period I.

Period II.

The second period of construction on the site was found to be represented by a nearly circular setting of stone-holes from which all stones had been removed; an external bank with internal quarry-ditch surrounding this area and having entrances to north and south; a large irregular pit near the centre of the site, and two graves. It will be convenient to deal separately with the various structural elements, beginning with those visible before excavation, the bank and ditch (fig. 6).

The Bank and Ditch.—As has already been mentioned, before excavation a shallow much-silted ditch and a massive though spread bank could be traced surrounding the cairn, the visible kerbstones of which (subsequently found to be of Period IV) overlay the ditch on the west. During the excavations two sections were cut through the bank, on the east and west of the site, and four sections were cut through the ditch filling, one on the east and three on the west. In addition, the ditch-ends were cleared on the west sides of the north and south entrances. Elsewhere the inner lip of the ditch was established for the whole circuit of the enclosed area, and

the outer edge for a considerable distance on the west and with trial cuttings elsewhere (fig. 3).

The bank, for which the ditch had provided a quarry, could be seen at the outset to be in a better state of preservation in its south-east quadrant than elsewhere. A cutting made through this best-preserved portion showed the bank to be standing to a maximum height of just under 4 feet above the rock, though on the west it was no more than 2 feet high. In both sections the rock beneath the bank was found to be covered with clay 6 inches or so thick, and on this the material of the bank had been piled. The central core consisted of fine earth and loam, presumably formed by the decomposition of rough turf stripped from the line of the ditch. Over and on both sides of this was piled earth and small angular stones derived from the ditch dug in the rotten basalt, and on the west the modern top soil and humus followed immediately on this. But on the east there was an additional layer of earth, with a considerable number of quite large stones forming a substantial capping to the whole bank. This layer has apparently been robbed from more than three-quarters of the circuit of the Henge bank and may, as we shall see, have been used to make up the cairn enlargement of Period IV.

In both sections the bank was separated from the ditch by a clear interval or berm about 12 feet wide, on which no clay layer remained. The ditch was somewhat irregular, and was clearly intended as a quarry for the bank, and it varied in depth according to the hardness of the rock in which it had been cut. On the east, the fairly soft rotten basalt permitted the digging of a flat-bottomed ditch about 12 feet wide at the top and having a maximum depth of 4 feet beneath the solid rock surface, but on the west an area of hard platy basalt had been encountered, with the result that a partial "causeway" had been left from which only the top surface had been scraped away, though on each side of the harder area the ditch, again about 12 feet wide, was excavated to a depth of some 3 feet into the rotten basalt. Similar conditions had been experienced by the ditch-diggers on the west side of the northern entrance, and another partial "causeway" left in a similar manner. On the east of the south entrance there was evidence that the ditch had been dug irregularly as if by gang labour.

In plan the ditch enclosed an oval area 145 by 125 feet, with two entrance-causeways to north and south about 30 feet across. The external bank approximated more nearly to a circle with a diameter of 200 feet crest to crest, with gaps at the entrance-causeways in the ditch. Within the enclosed area the hilltop rises in a gently domed profile.

The sections of ditch filling were consistent wherever exposed, and comprised a lower layer of fine clayey silt which graded into coarser loamy silt with small stones. Above this on the east was top soil and humus, and on the west the cairn material of Period IV overlay the upper silt, which was

CAIRNPAPPLE HILL : THE CAIRN (A REA 'A')

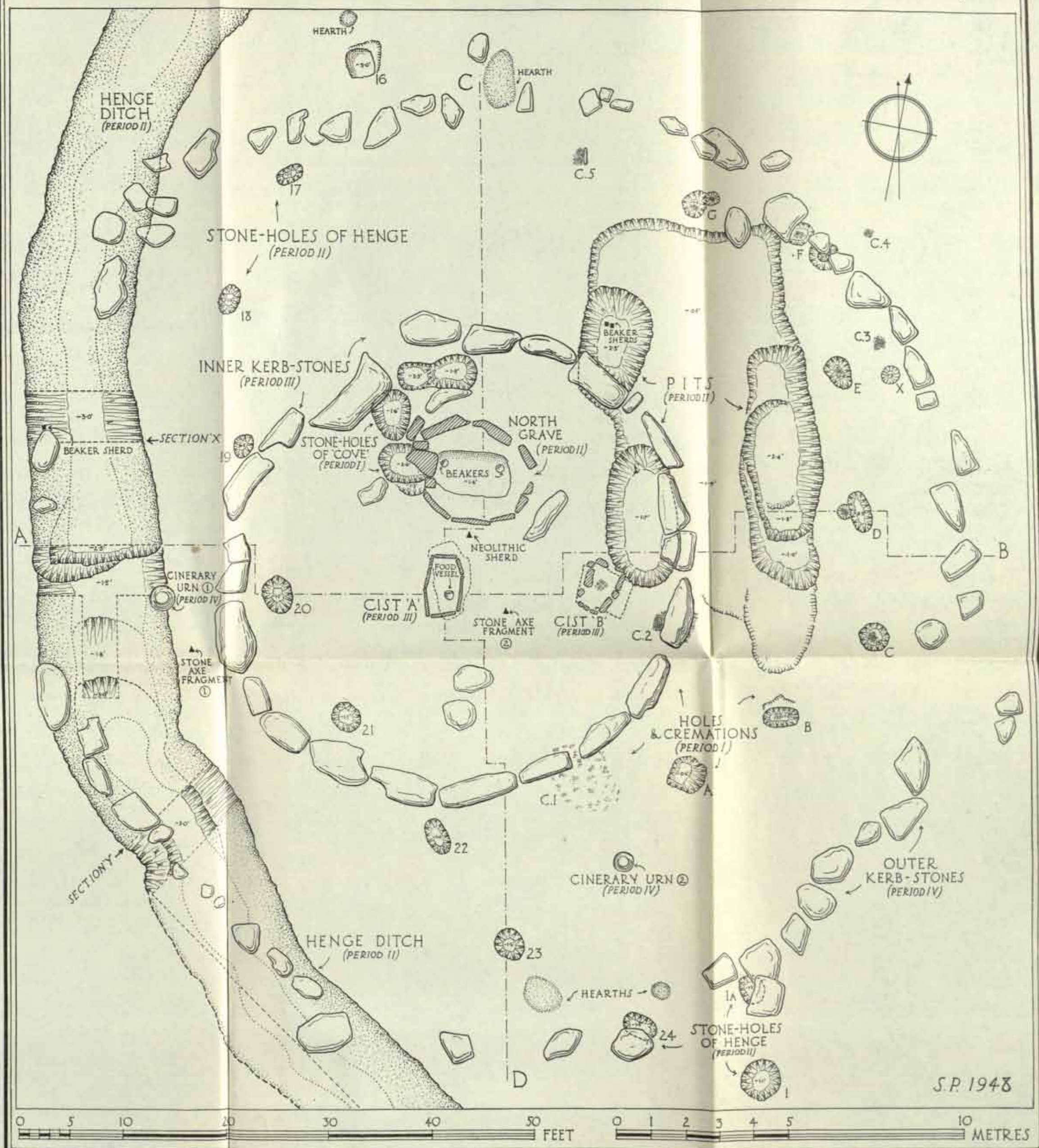
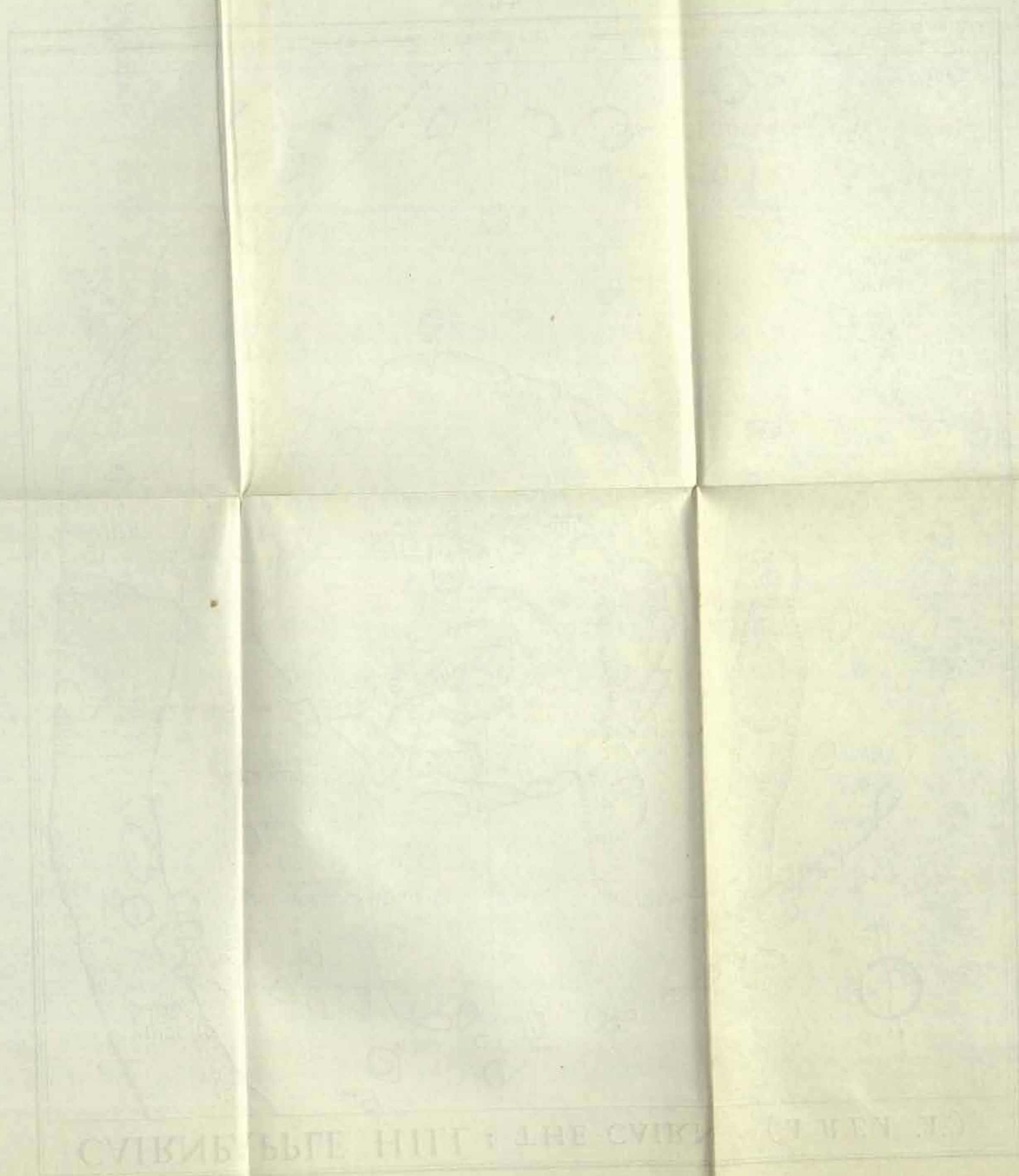
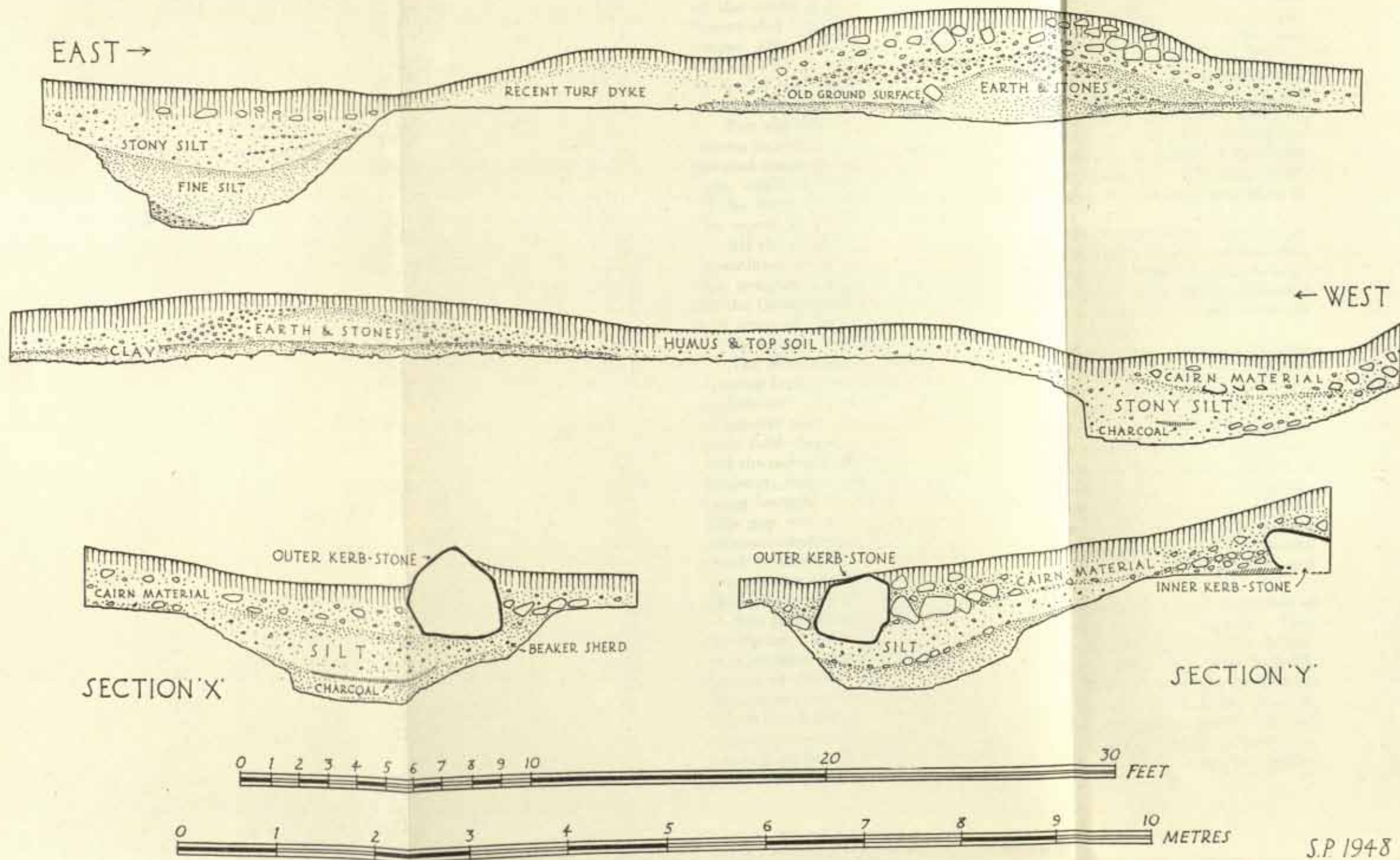


Fig. 5.

[To face page 82.]



CAIRNPAPPLE HILL: SECTIONS OF HENGEBANK & DITCH



S.P. 1948

Fig. 6.

SVIKIBYRGE HITT : THE SVIKIBYRGE

almost level with the surface of the rock on the lip of the ditch. The shallow ditch-end on the west side of the north entrance was filled level with stiff bluish-white clay silt, and the deeper ditch-end on the west end of the south entrance was similarly filled with a uniform deposit of fine brown clayey loam. All sections strongly suggested that at least the lower clayey silt, and probably the stonier silt above it, had been deposited rapidly and by water action. A layer of finely comminuted oak charcoal in one of the western ditch sections was spread over the lower silt surface in circumstances strongly suggestive of water deposition. (Section X, fig. 6.)

The slightly domed interior of the area enclosed by the ditch would of course have favoured such drainage and deposition of rapid silt: during the present excavations the ditch cuttings rapidly filled with muddy water after rain, which had drained down off the exposed rock surface. The connection of the ditch silt with the denudation of the inner area is discussed later in the report (p. 118).

All the features of the bank and ditch of the Period II structure are in accordance with those recorded from other excavated Henge monuments, the irregular quarry ditch and the berm being especially characteristic. In the Cairnpapple ditch silt one find only was made in the excavated areas—a scrap of abraded and undecorated Beaker ware on top of the lower silt on the west. No finds were made in the bank cuttings.

The Stone-holes.—Within the inner edge of the ditch, and at distances varying from 20 to 12 feet from it, was an oval setting of 24 holes, with two additional “inliers” to the main setting on north and south respectively. Whatever may be said of the Period I holes, these seem unquestionably to have held standing-stones. This stone “circle” measured 115 by 92 feet, and the normal spacing of the stones was about 13 feet apart. To the south, however, was a gap, stone-holes 1 and 2 being 25 feet apart, and No. 2 being brought to within 10 feet of its next neighbour, No. 3, to even up. This gap was approximately, though not precisely, opposite the southern entrance-causeway in the ditch and bank, but there was no corresponding break in the spacing of the stone-holes on the north, where they continued in a regular unbroken arc across the northern entrance through bank and ditch (fig. 3 and Pls. XVI and XVII).

The general character of the stone-holes was not dissimilar from that of the Period I holes A–G, though their arrangement was more regular. They were circular or oval in plan, with their long axes tangential to the circumference of the setting, where their length was greater than their breadth. The longest oval hole was just over 4 feet long, but the majority were about 3 by 2 feet 6 inches. Depth varied from 8 inches (No. 19) to 3 feet (No. 16), but both these extremes were exceptional, most averaging between 1 foot and 1 foot 6 inches deep (fig. 7). Packing-stones occurred in all but ten holes, No. 3 containing a very large globular block 1 foot in diameter in addition

to others of more normal dimensions. With the possible exception of stone-hole 20, which contained some freshly fractured chips, there was no evidence of the destruction of the stones that had originally stood in the holes, though all had been removed. No artefacts were found in the holes, but Nos. 20 and 21 were sealed by the Food-vessel cairn of Period III (Pl. XIX, 1), and Nos. 1a, 17-19 and 22-24 by the enlargement of Period IV. Furthermore, by the side of stone-hole 8 was a rock-cut grave containing a Beaker burial (Pl. XVIII). Their date, then, must fall within the Beaker period.

TABLE III.—STONE-HOLES OF THE HENGES MONUMENT (PERIOD II).

Stone-hole.	Length (ft. in.).	Breadth (ft. in.).	Depth (ft. in.).	Packing-stones.	Comments.
1	4 4	3 8	1 3	2 medium, 4 small.	..
1a	3 0	2 8	1 2	None.	Within main setting on south and under Period IV kerb.
2	3 4	2 6	2 8	1 large, 4 medium, 16 small.	..
3	2 6	2 6	1 6	1 very large, 6 large, 20 small.	One globular packing-stone 1 foot diameter.
4	2 10	2 4	1 6	3 large, 4 small.	..
5	2 8	2 8	1 4	4 medium small.	..
6	?	2 2	1 0	None.	Length unknown; cut into by late grave 1.
7	3 0	2 6	1 4	3 large.	..
8	4 0	2 4	1 2	5 large, 7 medium, 4 small.	Beaker grave on east.
9	4 2	2 8	1 6	3 large, 3 medium.	..
10	3 0	2 0	1 2	2 medium, 4 small.	..
11	2 6	2 4	1 0	3 medium, 3 small.	..
12	3 0	2 8	1 2	4 small.	..
13	3 0	3 0	1 2	2 small.	..
13a	2 6	2 6	0 8	None.	Within main setting on north.
14	3 6	2 8	1 4	6 small.	..
15	2 10	2 4	1 6	None.	..
16	3 10	3 0	3 0	None.	Scoop 1 foot deep on north-east. Hearth 2 feet 4 inches to north.
17	2 10	1 10	0 10	2 medium, 4 small.	Under Period IV cairn.
18	3 2	2 0	0 10	None.	Under Period IV cairn.
19	2 2	2 0	0 8	None.	Under Period IV cairn.
20	4 0	2 10	1 4	2 dozen medium, some chips.	Under Period III cairn. Partly dug in hard basalt.
21	2 8	2 10	1 2	1 large, 2 medium, 1 small.	Under Period III cairn.
22	3 4	2 4	1 0	None.	Under Period IV cairn.
23	3 4	2 8	1 6	None.	Under Period IV cairn.
24	3 4	2 6	1 6	None.	Under Period IV kerb.

Although no stones remained standing in these holes, there seems no reasonable doubt that their purpose was to act as sockets for standing-

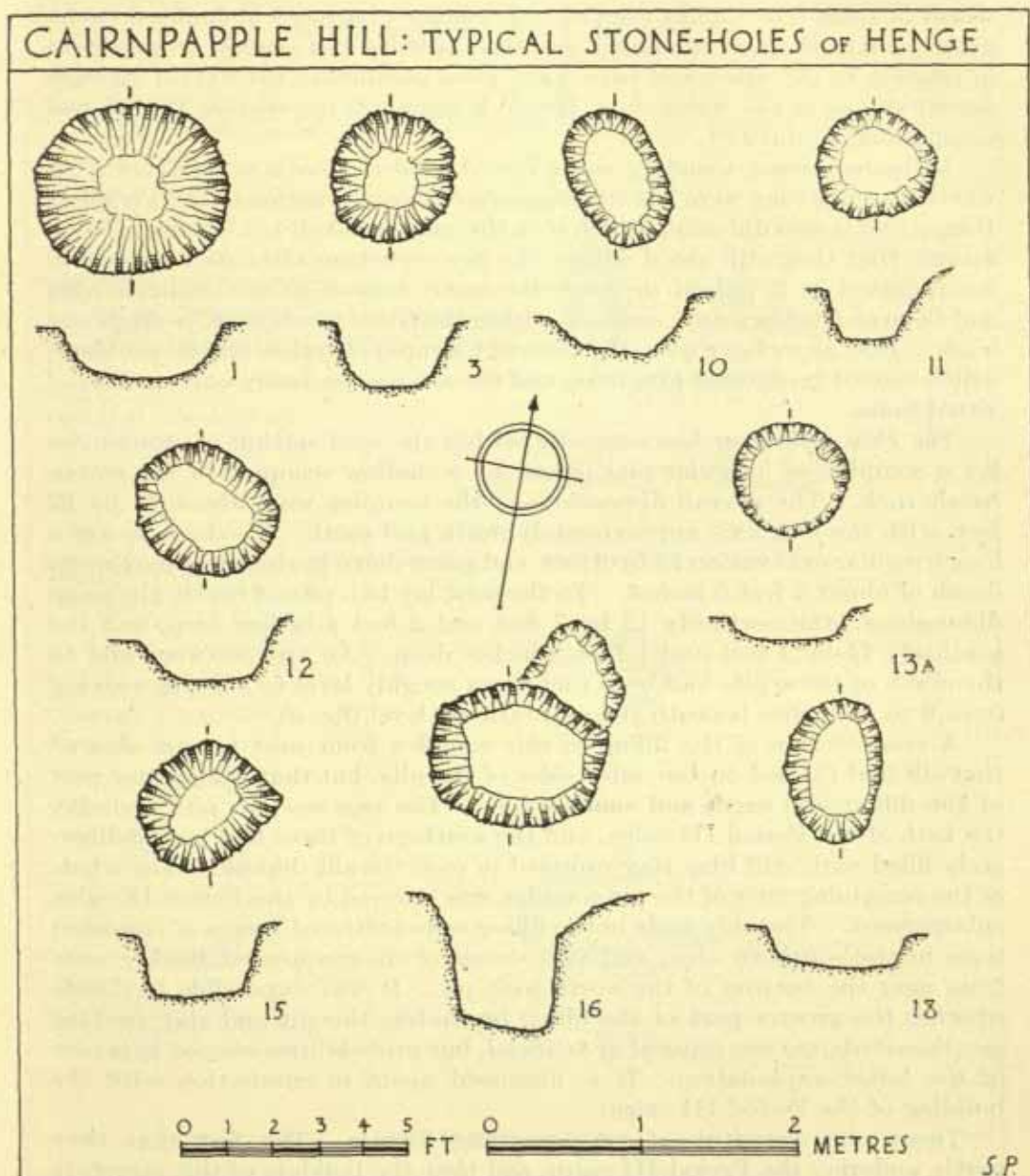


Fig. 7.

stones of some size. They are precisely similar in type to undoubted stone-holes (such as those at Avebury), and their position and general arrangement in relation to the ditch and bank have good parallels in the extant (though fallen) stones of the Arbor Low Henge Monument, to mention the nearest comparable monument.

If stones existed, standing in the Period I holes, there is no evidence as to whether or not they were left standing after the construction of the Period II Henge. If stones did exist (which is on the whole unlikely), it is reasonable to assume that they still stood within the new structure after its completion, incorporated in it indeed in much the same manner as the earlier circles and Cove at Avebury were enclosed within the Great Circle with its ditch and bank. But, as we have seen, the Cove at Cairnpapple raises special problems which cannot be entered into here, and the arc was probably only a series of ritual holes.

The Pits.—More or less centrally within the oval setting of stone-holes lay a complex of irregular pits linked by a shallow scooping of the rotten basalt rock. The overall dimensions of the complex were about 34 by 22 feet, with the long axis approximately north and south. To the east was a long irregular excavation 23 by 8 feet, and going down in steps to a maximum depth of about 2 feet 6 inches. To the west lay two pits of nearly the same dimensions: the northerly 12 by 7 feet and 2 feet 4 inches deep, and the southerly 14 by 7 feet and 1 foot 8 inches deep. An area between and to the north of these pits had been dug down roughly level to a depth varying from 6 to 10 inches beneath the natural rock-level (fig. 5).

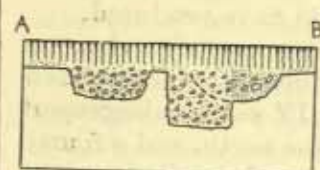
A cross-section of the filling of this complex from west to east showed that silt had formed on the outer sides of the pits, but that the greater part of the filling was earth and small stones. The two western pits underlay the kerb of the Period III cairn, and the southern of these had been deliberately filled with stiff blue clay rammed in over the silt deposit. The whole of the remaining area of the pit complex was covered by the Period IV cairn enlargement. The only finds in the filling were scattered scraps of cremated bone in the southern area, and two sherds of unornamented Beaker ware from near the bottom of the north-west pit. It was impossible to decide whether the greater part of the filling (excluding the silt and clay packing mentioned above) was natural or artificial, but probabilities seemed in favour of the latter explanation. It is discussed again in connection with the building of the Period III cairn.

These pits constitute a very puzzling feature. The fact that they partly underlay the Period III cairn, and that the builders of this structure were at pains to fill them up at least in part, implies that they were a feature of Period II date, which would be in accordance with the Beaker scraps from their primary silt. The outline of the complex appears to respect the Period I holes A-G (though it could conceivably be earlier, with the holes

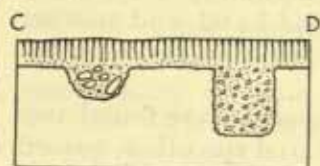
CAIRNPAPPLE HILL

AREA 'B'

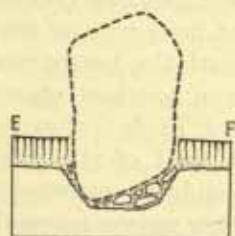
GRAVE & STONE-HOLES OF PERIOD II & LATER GRAVES (PERIOD V)



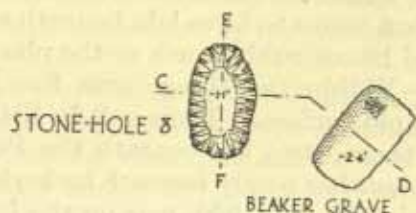
GRAVES & STONE-HOLE 6



STONE-HOLE 8 & BEAKER GRAVE

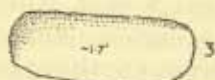


STONE-HOLE 8, WITH
OUTLINE OF STONE FROM
INNER KERB OF CAIRN

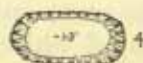


STONE-HOLE 8

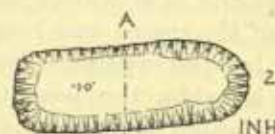
BEAKER GRAVE



INHUMATION GRAVES



STONE-HOLE 7



INHUMATION GRAVES



STONE-HOLE 6

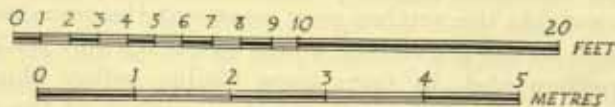


Fig. 8.

set round its edge). The few scraps of cremated bone in the filling suggest that cremations may have been disturbed in the digging of the pits. On the whole, then, the evidence is in favour of a Period II date, but the purpose of the complex is wholly obscure. Its character is that of a quarry or borrow-pit, but no obvious use can be suggested for the material excavated from the pits. It can hardly have served to cover the North Grave described below, as not only would the material be much in excess of this requirement, but the grave in fact seems to have lain beneath a small cairn of large stones, and not excavated basalt rubble such as the pits would have produced.

The Hearths.—Within the Henge area five burnt areas with charcoal were found on the old surface. These call for little comment, as no artefacts were found with them: two lay beneath the Period IV cairn enlargement on the south, and another partly beneath its kerb on the north, and a fourth was near stone-hole 16. The fifth was on the inner lip of the ditch on the east side of the south entrance, and contained a rod-shaped lump of grey-blue limestone full of white coral fossils, which might conceivably have been deliberately chosen for its curious appearance. But there is no direct evidence that the hearths were anything but utilitarian, and they are likely to belong to Period II. The woods burnt were oak and hazel, and another patch of oak charcoal came from under the Henge bank on the west (*cf.* Appendix D).

The Graves.—Within the area of the Henge Monument were found two graves of the Beaker period, one close to stone-hole 8 and the other, named the North Grave, incorporated within the Period III cairn.

The grave near stone-hole 8 was sub-rectangular in plan and measured 3 feet 8 inches by 2 feet, cut into the rotten basalt to a depth of nearly 2 feet 6 inches. It was filled with basalt rubble, and on the flat floor was no trace of any interment, as the acid soil of the site had dissolved the bones completely. The axis of the grave was roughly north-east and south-west, and in the north corner lay the crushed remains of a beaker of Type C that had been deposited on its side, the base towards the west wall of the grave (Pl. XVIII, 2). Although it would have been just possible to squeeze an adult body into the grave, with the beaker at its feet, Beaker graves normally provide a fair clearance between the body and the sides, so that in this instance it is more likely to have been the grave of a child or immature person (fig. 8).

The North Grave was an altogether more complex structure. It consisted of three main elements: a standing-stone, a rock-cut grave at its foot, and a setting of stones around the grave. In addition, two or three additional stones outside the setting may represent the remains of a further construction related to the grave (fig. 5 and Pls. XXI and XIX, 2).

The standing-stone had, in fact, been visible before the excavations started, as its head projected from the robbed surface of the cairn a little

to the north of its apparent centre. On excavation it was found to be 8 feet high, rather pear-shaped, with its smaller end at the foot: like the majority of extant structural stones on the site, it was a basalt or dolerite derived from local sources either in the boulder clay or as erratics. It stood at the eastern end of the southern of the three Cove holes which, as we have seen, probably belong to Period I. There were no packing-stones in the hole nor in the rock-cut grave which lay eastwards of the stone which, when excavated, was of course embedded in the material of the Period III cairn above ground-level.

At the foot of the stone was a large rock-cut grave, 7 by 4 feet with a sub-rectangular outline, and with its long axis approximately west-east. The floor, 1 foot 6 inches below the solid rock surface, was flat, and the sides of the grave had been slightly undercut. The actual grave deposit will be described below, after the stone setting round the grave has been discussed.

This setting of ten small stones (mainly sandstone, again of local origin) surrounded the grave and incorporated the large standing-stone as the westernmost member of a slightly oval enclosure, 10 by 9 feet. The stones stood on or were very slightly bedded into the clay capping of the rock, and were of course embedded in cairn material. Beyond this setting to the north-west and south-east lay large blocks of stone that might have been members of an outer, more massive setting or kerb. The northernmost of these slightly overlapped the southern edge of the northern Cove hole.

On the rock floor of the grave, slight stains over an elongated area stretching from near the foot of the standing-stone eastwards for 5 feet or so suggested the former presence of an inhumation, presumably at full length with its head to the east. Five feet 6 inches from the stone and nearly on the middle line of the grave was an area of carbonised wood a couple of inches above the rock floor in the filling of earth and basalt rubble contained by the grave, and on and in the under surface of this were found the enamel crowns of adult human teeth that had resisted solution in the humic acids. The wood area was an inch or so thick, and covered a space about 9 by 6 inches. It was derived from a single piece of oak wood, and must have represented some wooden object placed over the face of the corpse at burial.

Near the standing-stone at the foot of the grave was a crushed beaker that had been standing upright, with a layer of carbonised oak wood over it suggesting the former presence of a wooden lid. With the fragments was also one small sherd of the base of another vessel, showing the angle of junction of the wall. Near the north-east corner of the grave stood a second beaker, also crushed and telescoped. It had originally stood on a bed of grass, traces of which still adhered to the base when it was first lifted. Finally, along the north side of the grave lay a large carbonised object made of a single piece of oak wood. It had an overall length of 3 feet 6 inches and was 3 inches thick at the middle, expanding into an oval area of twice

this breadth at the eastern end. The western end had disintegrated into a series of streaks, but appeared also to have been of expanded form. The object bore a general resemblance to a massive club (fig. 9).

This burial has many points of remarkable interest. Its deposition at the foot of a standing-stone with its stone setting round it, the presumed extended position of the body, the wooden object that so strongly suggests a mask placed over the face, the two beakers and the probable wooden club; are all features difficult to parallel even in isolation, let alone combined in one grave. Taken with its position within the area of the Henge Monument, it can hardly be described as other than ceremonial in intent. The two beakers are of Type A, or the C_A form derived from it, and in this they differ from that with the burial against stone-hole 8, which is of Type C_B , but there is no evidence to show that this is a chronological distinction. The burial in the North Grave, then, should be contemporary with the Henge in Period II of Cairnpapple. It must be later than the Cove (presumably of Period I), and seems to have been incorporated complete into the food-vessel cairn of Period III, within which even the standing-stone at the foot of the grave was contained.

Unfortunately the stratigraphical evidence that one would expect for the inclusion of the North Grave within the Period III cairn was practically unobtainable. The vicinity of the standing-stone was the area of some of the most severe depredations by stone-robbers or treasure-seekers, who had dug down almost to the surface of the grave filling in parts. It seems absolutely necessary to assume the original existence of some form of cairn or mound over the grave: the thin slabs set on end round the burial could never have stood by themselves, and it is unlikely that the standing-stone could have remained upright set merely in loose rubble on west and east and standing nearly 6 feet clear of the ground. But in the critical sections it was impossible to detect any significant change in the loose stone composition of what remained of the cairn, and the former existence of a cairn over the grave in Period II, perhaps about 15 feet in diameter and with a kerb of large recumbent stones, must remain an assumption only. The existence of the burial, however, with its standing-stone, seems to have controlled to a certain extent the choice of the exact site for the Period III cairn, which must have been made so as to enclose deliberately within its kerb the ceremonial burial of Period II (fig. 10).

The structures of Period II are sufficiently complex to need a recapitulation. The stone circle¹ with its accompanying bank and internal ditch form together a fairly typical Henge Monument of the well-known type exemplified by, for instance, Arbor Low. The Cove, if standing at an early

¹ Although strictly an oval, it is convenient to refer to the setting of stones at Cairnpapple Period II as a "stone circle," using the term in its generally accepted archaeological sense and not as a geometrical description of the structure.

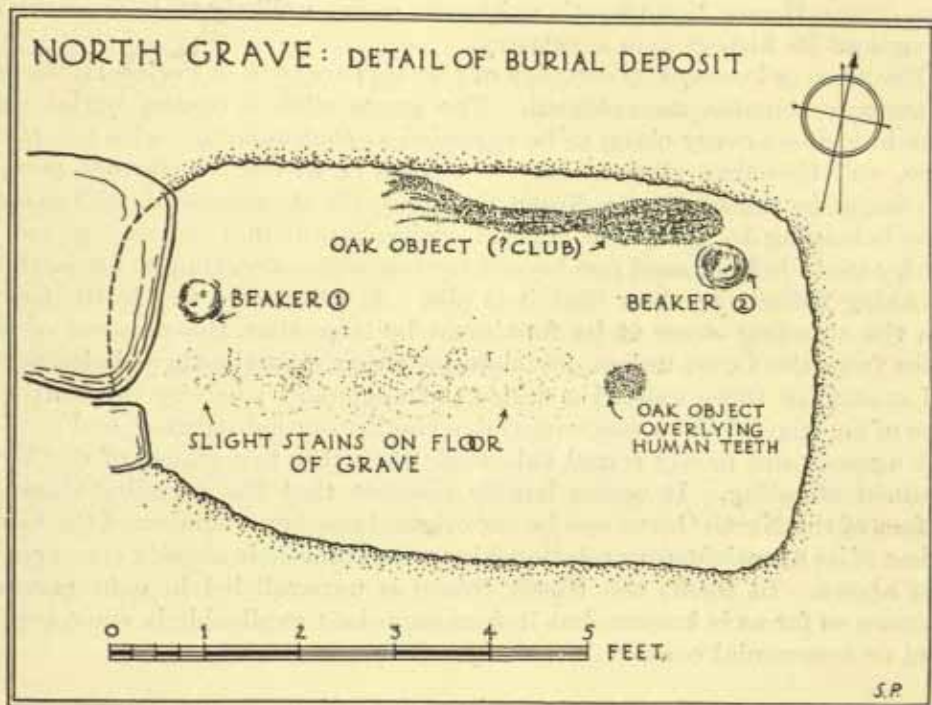


Fig. 9.

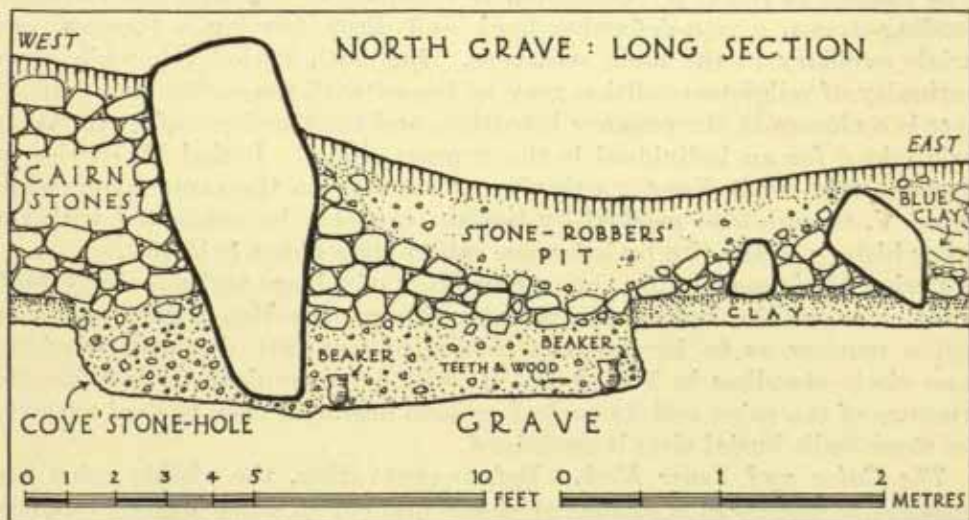


Fig. 10.

stage of the Henge Monument's existence, seems unlikely to have survived throughout its history as a sanctuary.

The more or less central complex of pits appears to be of Period II, though its purpose remains unexplained. The grave with a beaker burial near stone-hole 8 has every claim to be regarded as contemporary with the stone circle, and therefore gives a date to Period II within the Beaker period. The burial in the elaborate North Grave, again accompanied by beakers, while belonging to the same general archaeological and cultural phase as that by stone-hole 8, need not be strictly contemporary, though again there is nothing definite to show that it is not. At all events, the North Grave with the standing-stone at its foot must be later than the removal of the stones from the Cove, unless one assumes either that the three holes never held stones, or there existed a curious arrangement whereby the southern stone of an original Cove was removed, a smaller one substituted, and a cairn built against and partly round this while the other two stones of the Cove remained standing. It seems hardly possible that the standing-stone at the foot of the North Grave can be the original southern member of the Cove, in view of its unsatisfactory relationship to the stone-hole already commented upon above. In itself, the North Grave is unparalleled in contents and structure so far as is known, but it does seem best explicable in some sort of ritual or ceremonial context.

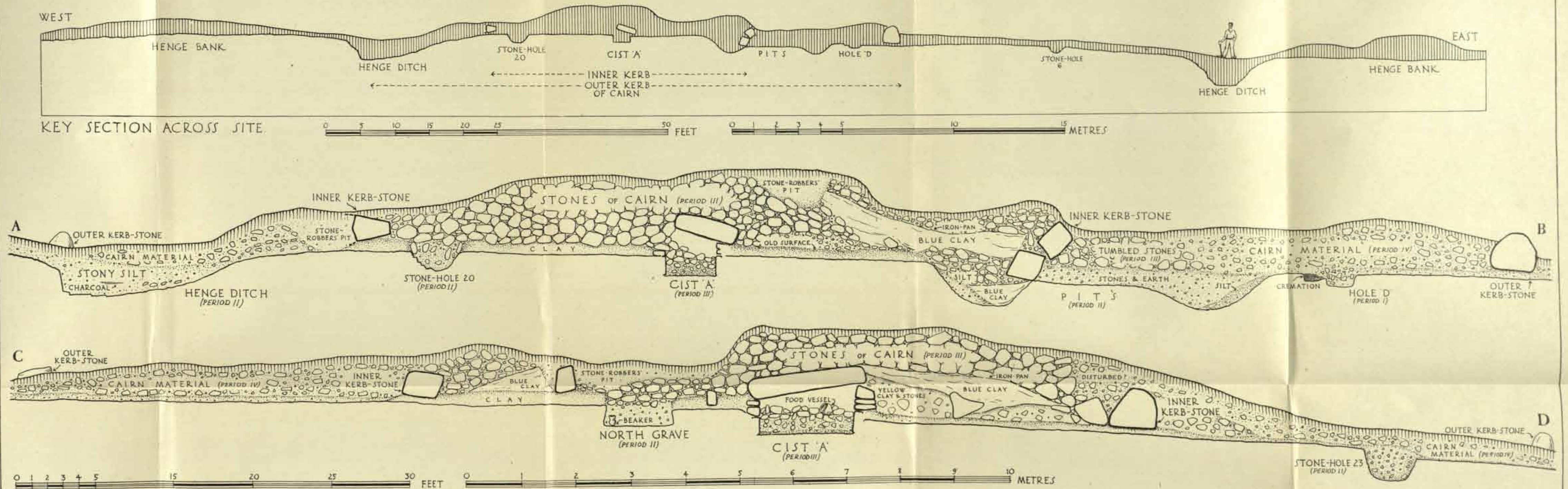
Period III (figs. 3 and 5, and Pl. XX).

The structures described under Periods I and II at Cairnpapple are both to be classed as ritual or ceremonial in some sense—settings and circles of standing-stones, a non-defensive bank and ditch forming a *temenos*, and burials ancillary to the main structure. But with Period III, while some continuity of religious tradition may be traced with the earlier monuments, there is a change in the primary intention, and the provision of an imposing burial-place for an individual is the express object. Period IV carries on the same tale, with direct continuity of sanctity on the same spot; while Period V, though also marked by burials, can only be connected with the earlier history of the site by inference rather than direct evidence.

Period III is marked by the construction of a large and massively built burial cairn within, but to the western side of, the Henge Monument, in such a manner as to involve the partial or complete destruction of the stone circle standing in Period II. It will be convenient to describe the structure of the cairn and its encircling kerb first, and then to deal with the two stone-built burial cists it contained.

The Cairn and Inner Kerb.—Before excavation, the visible cairn had appeared to consist of a mound of stones and earth, much robbed but now grass-grown, with an irregular kerb of fairly large boulders at its foot,

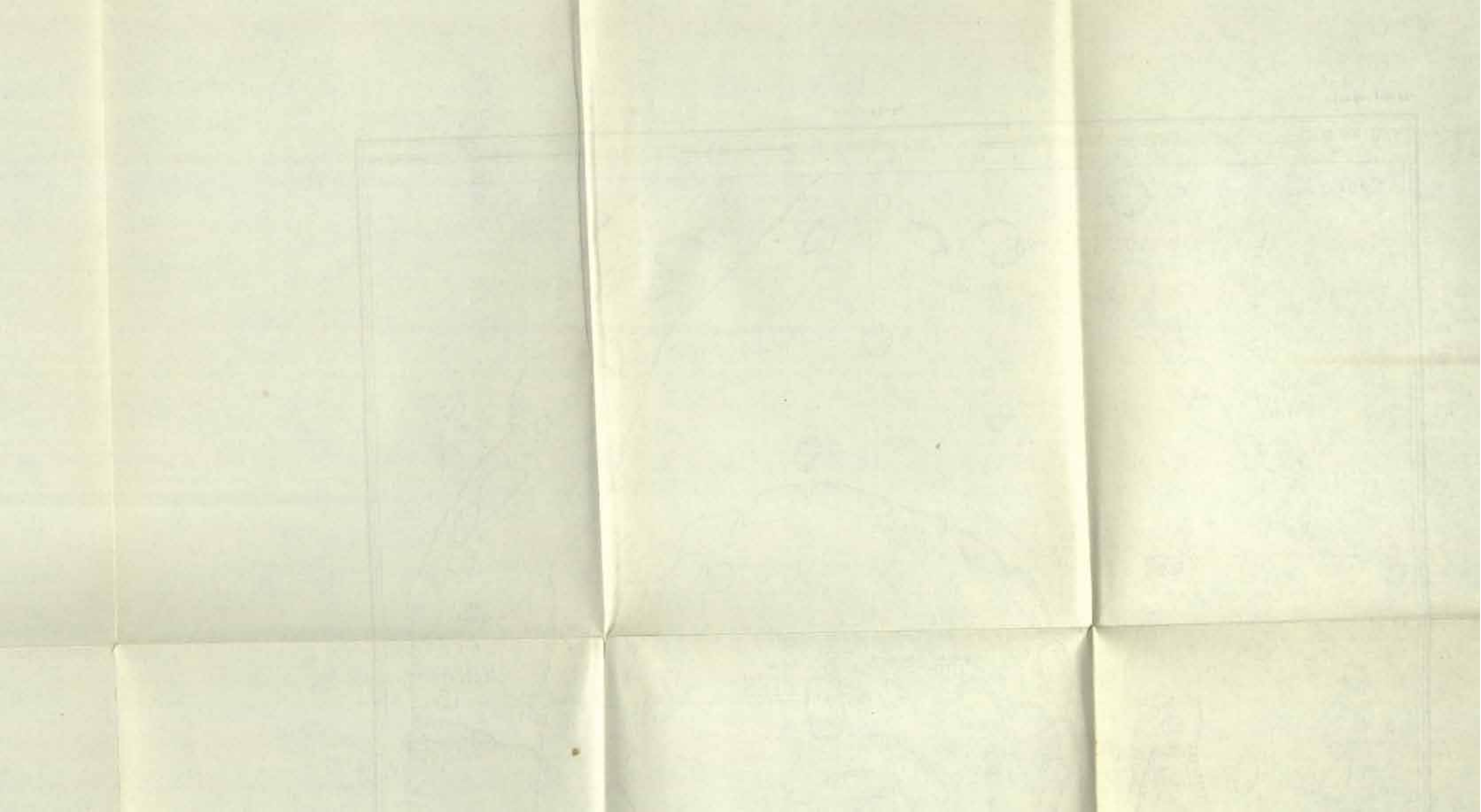
CAIRNPAPPLE HILL : SECTIONS OF CAIRN.



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Fig. 11.

(To face page 102.)



about 100 feet in diameter, and in its more intact portions standing to a height of some 5 feet above the surrounding area. The trial excavations of 1947 showed that within this cairn, and invisible on the surface, was an inner kerb of very massive stones, and the complete excavation of the following year showed this kerb to be a complete circle about 50 feet in diameter, to which the outer kerb and the intermediate cairn material had been added in Period IV, enlarging the mound to twice its original diameter. Within the inner kerb was the earlier, original cairn of Period III (Pl. XXII, 1).

The whole of the rock surface under the Period III cairn was covered with a thick layer of natural brown clay, extending under the kerb, beyond which it tailed out rapidly; it was not present under the Period IV enlargement, where the old ground surface was stony loam and rotted rock fragments. On this clay the Period III cairn had been built, enclosed within a kerb of large stones laid on their sides. This kerb will be described separately below, but it should be noted here that its circuit included stone-holes 20 and 21 of the Henge Monument, the holes of the Cove, the North Grave, and part of the pit complex of Period II, on all of which the cairn was built. With the exception of the standing-stone at the foot of the North Grave, no stones were standing in any of the stone-holes covered by the cairn.

The material of the cairn was mainly large stones with very little earth or none at all. Practically the whole of the north-west quadrant, and part of the south-west, was composed of such large stones, but elsewhere considerable use had been made of clay as building material. On the south, the lower part of the cairn consisted of yellow clay and large stones, above which was a layer, up to 2 feet 6 inches thick, of stiff blue boulder-clay showing thin red streaks of iron-pan, and a thicker layer of this on its upper surface,¹ implying a trampled or consolidated surface. Above this, the rest of the cairn was made up of large blocks as elsewhere where clay was not present (fig. 11).

On the east, the blue clay layer with iron-pan on top continued to much the same thickness as on the south. Here the cairn overlay the western edge of the Period II complex of pits, and the south-westerly pit had been deliberately filled with similar blue clay, capped with iron-pan, rammed in on top of the thin layer of natural silting on the west side. On this clay basis the actual kerbstones had been set, backed by the clay layer within the cairn, with loose stones again on top of this. The subsequent collapse of this part of the cairn outwards is described below.

At many points the disturbed material resulting from stone-robbing could be detected in the cairn make-up. On the south, however, there is

¹ For a discussion of the formation of iron-pan in such circumstances, see F. J. North in *Arch.*, vol. lxxxix. (1943), pp. 124-5.

a curiously definite line at which the large stones of the cairn stop 3 feet behind the kerbstones, the interval being filled with smaller material. It is not quite certain that this is the result of stone-robbing, but it is difficult to account for by other means. On the north there was heavy robbing over the critical area of the North Grave, as has already been mentioned, thereby destroying possible stratification that might have shown the earlier cairn encapsulated within that of Period III. But it should be noticed that the clay layer in the cairn make-up in this area overlapped but stopped against the outer possible kerbstone of the North Grave on the south-east: on the north, stone-robbing had destroyed evidence of its relationship to the outer stone at this point. On the whole, though, it does suggest that the North Grave did have a small cairn, with kerb, against and over which the Period III cairn was constructed (fig. 10).

The inner kerb consisted of twenty-one large or very large stones, up to 9 feet long, laid on their sides on the old surface, and in some instances, particularly on the south, carefully packed at the base. On the south-west, one small stone 4 feet long could be seen to be in fact a fragment broken from its neighbour to the north, and turned round to fit the arrangement of the kerb better: on the west, a stone had been partly destroyed by blasting in the nineteenth century, part of the hole drilled for the charge being still visible.

The kerb had evidently been intended to form a visible part of the cairn from the first. There was a very little compact cairn material, 6 or 8 inches thick and distinguishable from that of the enlargement, outside the kerb in most places and covering the remnants of the clay capping, but on the south-east two thin kerbstones, originally set upright, had been thrust forward by the weight of the cairn behind them and fallen nearly prone—such a collapse could hardly have taken place if the kerb had been hidden and supported by "extra-revetment" material in the manner of certain megalithic chambered tombs in England and Wales¹ (Pl. XXII, 2). One of these stones overlay Cremation 2 of Period I, and Cremation 1 of the same series was overlaid by two stones of the kerb on the south-south-east. Over the south-western of the Period II pits, despite the filling, there had been collapse of the cairn and actual fracture of a kerbstone.

This cairn collapse resulted in a great spread of large stones beyond the limits of the kerb on the east and north-east, extending over the greater part of the pit complex of Period II. The fact that large stones were not found in the pit fillings, and that the collapsed material was spread over a more or less even surface of filling, implies that before the building of the Period III cairn the pit complex was probably deliberately filled all over its area with earth and small stones, though clay was used for the seating of the kerb itself at one point. The collapse of the cairn caused some internal

¹ For this, cf. *Arch.*, vol. lxxxvi. (1937), p. 136; *Proc. Prehist. Soc.* (1939), p. 125.

settlement and distortion, which will be described below in connection with the central burial cist.

The immediate question posed by this cairn with its monumental kerb is the source of the stones. The boulders making up the body of the cairn could have been collected from anywhere in the district, weathered out of the boulder clay. The kerbstones, too, are all of local origin, being mainly of basalt or dolerite, with a single sandstone block, and all obtainable as erratic blocks on the neighbouring hill-slopes, whence too must have come the blue clay.

But though of local origin, the question is only half answered at this point. What had happened to the stones formerly standing within the bank and ditch of the Henge Monument? It is clear that Nos. 20 and 21 had been bodily removed before the building of the Period III cairn, for their stone-holes, rubble-filled, lay beneath the structure. The stone structures of Period II comprised at least twenty-six stones in the Henge Monument, and three Cove stones of Period I are likely to have existed: these would provide an obvious quarry to builders of a cairn provided that their religious traditions did not stand in the way of demolition of an earlier sacred site. The stone-holes of the Cove and Henge Monument imply stones of precisely the proportions of those that make up the kerb (and the cist capstones) of the Period III cairn, and while in the nature of things it is impossible to prove, it does seem reasonable to assume that the Henge Monument was plundered of its standing-stones for the purpose of making the Period III cairn. The implications of such an act in terms of changing traditions and cultures is discussed at greater length below, but it is sufficient here to note that the burial in the central cist was accompanied by a Food-vessel pot, characteristic of a culture alien in tradition to that of the Beakers.

The cairn is sited on the summit of the hill, and it seems likely that this fact played a part in the choice of the exact position for the structure. But the inclusion of the North Grave seems so deliberate, that we must also allow some weight to a measure of religious continuity curiously at variance with the spirit that permitted the demolition of the most prominent feature of the Henge Monument. The inclusion of the cairn within the ancient *temenos*, and its incapsulation of what seems likely to be its ceremonial or liturgical centre inside its boundaries, is in striking antithesis to the removal of the standing-stones and their reuse for a funeral purpose.

The Cists.—Beneath the Period III cairn were two burial cists, one (Cist A) at the centre and the other (Cist B) 11 feet away to the east. Cist A, the larger and by far the better built of the two, was constructed by digging a rectangular pit about 6 feet 6 inches by 4 feet, and 1 foot 4 inches deep, into the rotten basalt at the centre of the cairn. This pit was then lined with six large sandstone slabs on edge, and above this, uncoursed

drystone walling was carried up in large basalt or sandstone blocks to a further 1 foot 3 inches or so, supporting a massive basalt capstone 8 by 4

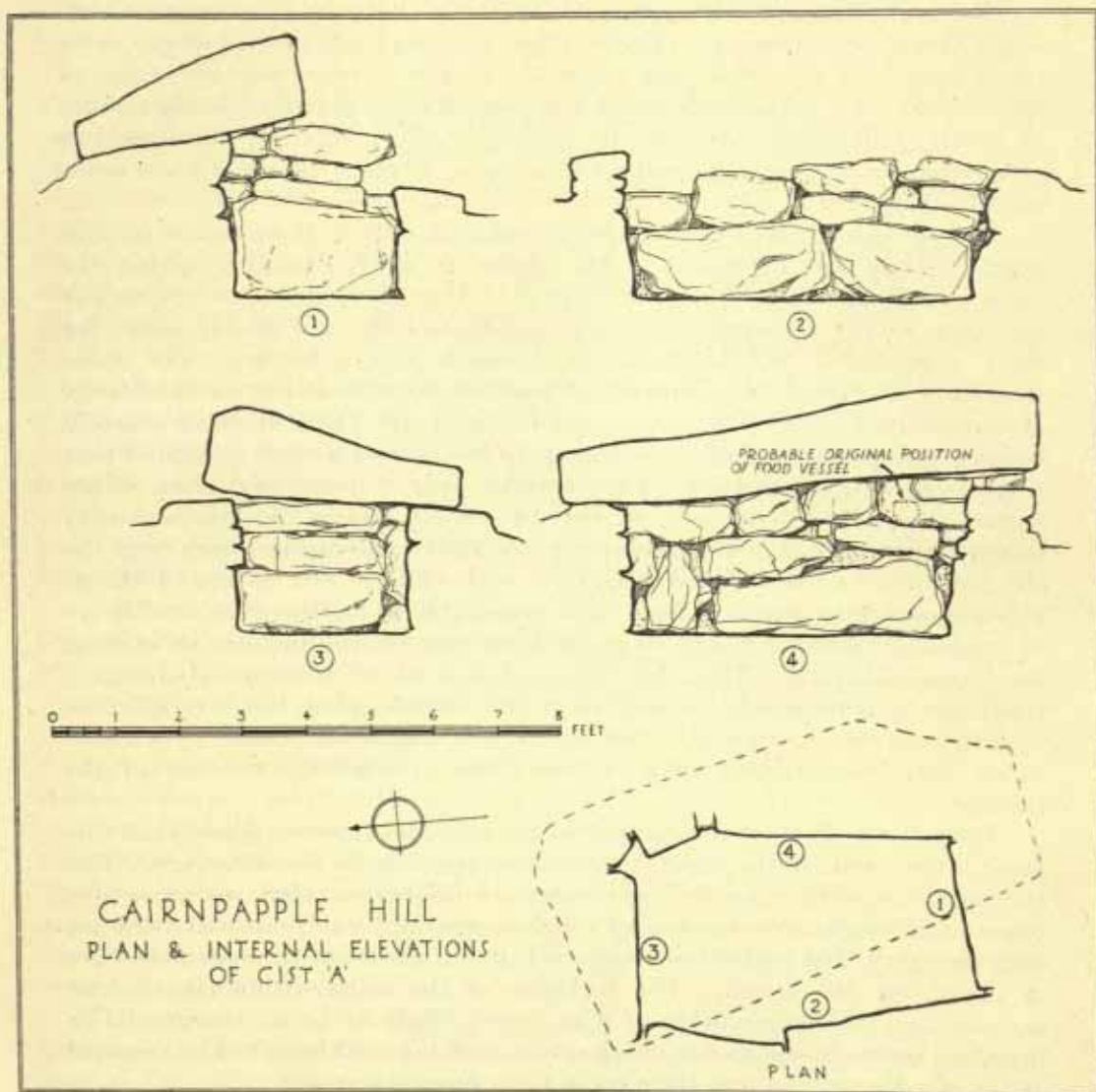


Fig. 12.

feet and up to 1 foot 3 inches thick. The long axis of the cist lay approximately north and south (fig. 12 and Pl. XXIII, 1).

The cairn material above the cist consisted of large loose stones, and with the collapse of the cairn on the east, over the made soil of the filled-in

pits of Period II, there had been considerable lateral shifting of the stones. This had resulted in the wrenching of the capstone of Cist A towards the north-west, and the collapse of the upper part of the walling of the western side into the cist itself, into which loose stones from the cairn had also fallen, filling the cist to within a foot or so of the underside of the capstone. The upper stones of the walling on the north and north-east had been cracked by the pressure upon them of the displaced cap.

The displacement of the capstone enabled access to the cist to be gained on excavation without further movement of the heavy stone mass. After a few of the stones that half filled the cist had been removed, an intact Food-vessel pot was found in its side, lying on and among the upper stones of the filling that had resulted from the cairn displacement just described. The greater part of the cist filling was of such stones, some of which could be recognised as part of the collapsed walling of the western side of the cist, one of these having three cup-marks "pecked" on its flat surface, presumably that facing inwards in its original position (Pl. XXIII, 2). The lower part of the filling was stiff clay and stones, with gravelly material on the rock floor, in which were the smashed remains of human bones, almost unrecognisable but evidently belonging to an inhumed burial. A small conical object of structureless carbonised material was also found on the floor of the cist (fig. 18).

It was difficult to understand the survival of the intact Food-vessel and its presence on top of, rather than under, the cist filling. But an examination of the walling of the cist provided a plausible explanation for its appearance in so unexpected a position. In the upper part of the eastern wall two stones were slightly set back above a lower flat-topped block in such a manner as to form a shallow shelf, immediately adjacent to the point at which the food-vessel had been found on the filling a few inches lower. It was found that the pot could be stood securely on this ledge, and it is therefore suggested that it was originally placed here when the burial was deposited on the floor of the cist. The vibration of the displacement of the capstone and the collapse of stones into the cist would have caused it to fall off the ledge on to the material by then half filling the cist, without damage to its fairly robust fabric.

Cist B (Pl. XXIV) was a far less impressive structure than Cist A. The capstone was massive enough—a sandstone block nearly 5 feet square and 1 foot 6 inches thick—but the structure of the cist beneath it consisted of a single course of small stone blocks outlining a roughly rectangular area and bedded down into the clay capping of the rock. Within this area the clay had been removed, and on the rock in the centre lay an unaccompanied human cremation in a compact heap. A large smooth pebble of attractive greenish stone, derived from the boulder clay, also lay in the cist, but its

presence may well have been accidental. The cremated bones represented a youngish adult, possibly female.¹

There were no other finds within the material of the cairn except for several stones with single cup-marks "pecked" on their surface, and one globular lump, apparently roughly dressed into shape, with two opposed hollows made in it, suggesting a stone-dressing maul or similar tool (Pl. XXVI, 2, and fig. 19).

The dating of the Period III cairn rests upon the Food-vessel pot found in Cist A. There is no doubt of the contemporaneity of the cist with the cairn, and Cist B, sealed beneath the blue clay layer, is also primary. Stratigraphically, the cairn is later than the Period II Henge, of the Beaker culture, and a date in the Scottish Middle Bronze Age is in every way appropriate for Period III at Cairnpapple.

Period IV (figs. 5 and 13).

The fourth constructional period at Cairnpapple follows closely in intention, if not in time, upon Period III, forming a direct enlargement of that cairn to double its diameter, with a new kerb replacing that buried by the added material. Within this enlarged area were two burials of cremated bones under inverted cinerary urns of the later Middle Bronze Age or beginning of the native Late Bronze Age.

The Cairn Enlargement and Outer Kerb.—The material of the cairn enlargement was easily distinguishable from that of the original Period III construction, consisting of stones with a large admixture of earth and nowhere composed either of clay or of pure stones. It is difficult to suggest the origin of this material, which completely masked the kerb of the Period III cairn to a height in places of 3 feet 6 inches, though there is no evidence that it formed a substantial capping to the earlier structure. There is, however, a possibility that the absence for three-quarters of the Henge Monument bank of the upper layer of earth and large stones found in the south-east quarter may be accounted for by assuming that the bank was systematically robbed for material to make up the enlarged cairn in Period IV.

Round the base of the enlarged cairn a kerb of about sixty rounded boulders forming a rough circle about 100 feet in diameter was visible before excavation. None of the stones are of the size or proportions of those in the inner kerb of Period III, and few would have been suitable as standing-stones. The longest is 6 feet long, but the majority average 4-5 feet long and 2-3 feet wide, and all lay either on the rock or, on the south-east particularly, on loamy soil filling a large shallow hollow in the rock at this point.

¹ See Dr W. C. O. Hill's report in Appendix C.

The cairn enlargement of Period IV covers a number of features of the earlier monuments on the site. All the holes A-G and all save one of the scattered cremations of Period I are covered by it wholly or in part; the pit complex, and stone-holes 17-19, 22-24 and 1a, and part of the silted-up ditch, all of Period II, are likewise beneath the cairn or kerb.

The relationship of the Period IV enlargement to the Period II Henge Monument ditch was apparent before excavation, and it was studied during excavation in three sections. These were consistent in showing that the ditch had silted nearly level by the time the Period IV cairn and nearly a quarter of its kerb was built over it on the west. Though the builders of the Period III cairn showed some concern in at least incorporating the

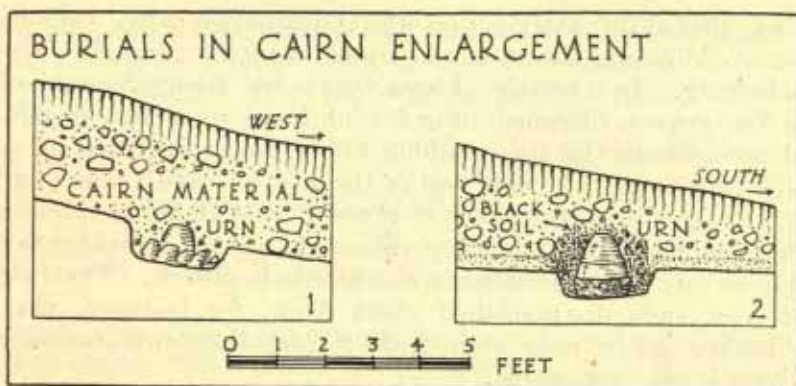


Fig. 13.

North Grave of Period II within the new structure, by the time of the Period IV enlargement all concern for the Henge Monument must have vanished, and it is doubtful whether its existence was recognised, save for the probability that its bank made a convenient quarry.

The clay capping that existed beneath the Period III cairn was lacking beneath the area of the enlargement, though an old ground surface could be traced over a layer of stony loam in places.

The Burials.—Of the two burials under cinerary urns found within the area of the cairn enlargement, No. 1 lay to the west and within 5 feet of the inner kerb of Period III. A shallow hole 2 feet in diameter and 9 inches deep below the solid rock had been dug, and an overhanging-rim cinerary urn inverted over a deposit of cremated human bones: the urn had collapsed and telescoped into its rim. With the bones was a large calcined pin, probably made of red deer antler.

Cinerary Urn No. 2 lay south-south-east of the centre, almost midway between the two kerbs. A similar excavation had been made to that of No. 1, but the large collared urn still stood intact, inverted over the cremation,

which was accompanied by a burnt bone (or antler) pin with eyed head. Around and under the urn was a deposit of sooty earth containing fragments of charcoal and burnt chips from flint implements with secondary working, the whole strongly suggesting material from an occupation site or hut floor piled over the burial ¹ (Pl. XXV and fig. 13).

Both burials should belong to a late phase of the local Middle Bronze Age or early in the succeeding native Late Bronze Age, the upper boundary of which is hard to fix. Stratigraphically, the enlargement is clearly subsequent to Period III, the Food-vessel cairn.

Period V (fig. 8).

The last period of activity on the Cairnpapple site, excluding the depredations of historic times, is of curious character, and direct evidence of date is lacking. In a restricted area within the Henge Monument to the east were four graves, obviously dug for inhumations at full length. They contained no finds in the loose rubble filling, and any trace of skeletons would have vanished in the acid soil of the site. Grave 1 was dug in such a manner as to cut into stone-hole 6 of the Period II Henge Monument at some date after the stone had been removed, but other evidence of their relationship to any of the structures on the site is absent. Their elongated form and oval ends distinguished them from, for instance, the closely adjacent beaker grave near stone-hole 8, and their orientation roughly east and west is also noticeable.

Despite this last fact, they are unlikely to be Christian graves on a remote hilltop and within the remnants of a pagan monument. A date in the pre-Christian Iron Age seems the most likely attribution on analogy with other North British finds of comparable type but with some dating evidence.

TABLE IV.—THE LATE GRAVES (PERIOD V).

Grave.	Length (ft. in.).	Breadth (ft. in.).	Depth (ft. in.)	Comments.
1	7 9	2 10	2 0	Cuts stone-hole 6.
2	8 0	3 0	1 0	Touches Grave 1.
3	6 6	2 6	1 9	..
4	4 0	2 0	1 4	Presumably for a child.

¹ The "tiny sherds of cord-ornamented pottery" from this deposit referred to in the interim report in *Antiquity*, vol. xxiii. (1949) p. 37, proved on further examination to be chips from the rim of the cinerary urn itself.

*The Finds.*¹*Period I.*

1. (EP 162.) Upper part of pin of bone or antler, calcined. The surviving portion is 3.2 inches long and nearly circular in cross-section; 0.2 inch diameter at the broken end and 0.3 inch diameter at the slightly expanded subconical head. With cremation in stone-hole C. (fig. 14, 1).
2. (EP 164.) Fragment of the shaft of a similar pin, calcined, 1.2 inches long and 0.25 inch diameter. With detached cremation No. 1 (fig. 14, 2).

These pins can be recognised as members of a class of Late Neolithic pins best known at present from cremation-cemeteries such as that at Cairnpapple. Geographically, the nearest parallels come from the remark-

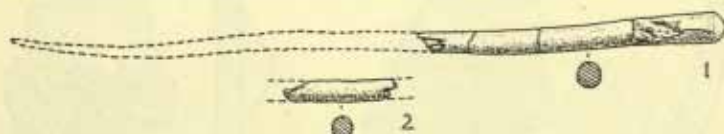


Fig. 14. Pins from Period I cremations (1).

able communal burials in the Duggleby Howe, E.R. Yorks,² which included both inhumations and a cremation-cemetery of over fifty deposits, with three of which such pins were found. With the inhumations were various grave-goods such as a polished flint axe, a flint knife polished on the face and edge, leaf-shaped arrow-heads and others of the "petit tranche derivative" type often associated with the Peterborough and Grooved Ware Neolithic cultures.³ In the south of England similar pins were found in the cremation-cemetery in and around the Aubrey Holes and the bank and ditch of Stonehenge,⁴ again referable to a Grooved Ware and pre-Beaker date, and in the remarkable series of ditch-enclosed cremation cemeteries at Dorchester-on-Thames,⁵ also Late Neolithic in date.

3. (EP 170.) Sherd of brownish ware with some grit but smoothed surface. A shallow vertical incision on the outer surface appears to be accidental. The upper edge seems to have been broken off

¹ The finds described below, except Nos. 13, 14 and 16, have been deposited in the National Museum of Antiquities. Their Museum registration numbers are given in brackets after the serial number in each instance.

² Mortimer, *Forty Years*, p. 22; pins illustrated in figs. 62 and 66.

³ J. G. D. Clark, *Arch. Journ.*, vol. xci. (1935), p. 32.

⁴ *Antiq. Journ.*, vols. i. (1921), p. 32; viii. (1938), p. 158 (not illus.). Pins were found with cremations in Aubrey Holes 5, 12, 13 and 24, and with other cremations in the same area. For the sherd of Grooved Ware from Stonehenge (primary ditch silting below Beaker sherds), see *Antiquity*, vol. x. (1937), p. 221.

⁵ R. J. C. Atkinson and C. M. Piggott, *Excavations at Dorchester, Oxon* (1950).

near the rim of a shallow bowl, and the lower edge shows evidence of an overlapping joint resulting from coil or ring technique in building up the vessel. From the old surface between Cist A and the North Grave (fig. 15, 1).

4. (EP 176.) Sherd of rather gritty ware, brownish to black. A low rounded lug projects 0.3 inch from the outer surface. From the filling of the North Grave (fig. 15, 2).

The general features of both sherds suggest affiliation to the "Western" group of British Neolithic pottery in its widest sense—the shallow bowl form, the lack of ornament and the lug all form recognisable features of this ceramic tradition. But there is one point likely to be alien—the evidence of coil building in the unlugged sherd. This technique has been studied by Stevenson in an important preliminary paper¹ in which he showed that

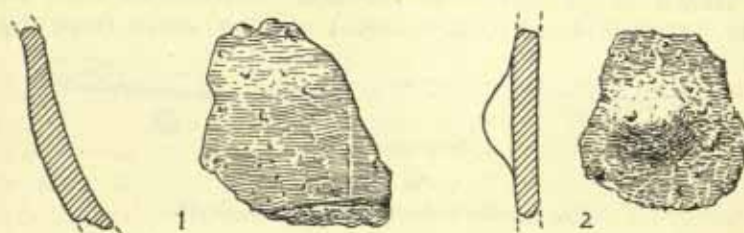


Fig. 15. Sherds of Neolithic pottery from old ground surface under cairn and filling of North Grave (4).

whereas the method is used in the Grooved Ware or Skara Brae pottery, and in Peterborough ware, continuing in beakers and Bronze Age pottery generally, yet it is not characteristic of the "Western" Neolithic family of wares. One must not attach too much importance to its occurrence on the Cairnpapple sherd, but nevertheless the cremation-cemetery and its bone pins would be more at home in a Peterborough-Grooved Ware context than in the "Western" Neolithic as we know it in the North.

5. (EP 166.) Broken fragment of the cutting edge of a polished axe of Langdale Pike stone. The cutting edge is 2.1 inches wide, and the axe was probably about 0.85 inch thick near the edge. The sides are asymmetrically flattened. The fractures suggest that the axe was broken in use. From the old surface immediately outside the inner kerb on the west (Axe No. 1) (fig. 16, 1).
6. (EP 167.) Flake struck from the cutting edge of an axe of Graig Lwyd stone while in use. The inner surface of the flake has a marked bulb of percussion, and shows the characteristic striated structure of the Graig Lwyd augite granophyre rock. From the

¹ *Proc. Soc. Ant. Scot.*, vol. lxxiii. (1938-39), pp. 233-9.

old surface near the centre of the Period III cairn (Axe No. 2) (fig. 16, 2).

Little can be said of the typological affinities of the axe represented by No. 5: flattened sides occur on flint axes from the lowest levels at Windmill Hill but need not be a significant feature. The main interest of the two fragments lies in their material, one being a product of the axe factory at Stake Pass, or that on the slopes of the Pike o' Stickle in Langdale, Westmorland,¹ and the other from that at Graig Lwyd on Penmaenmawr Mountain,

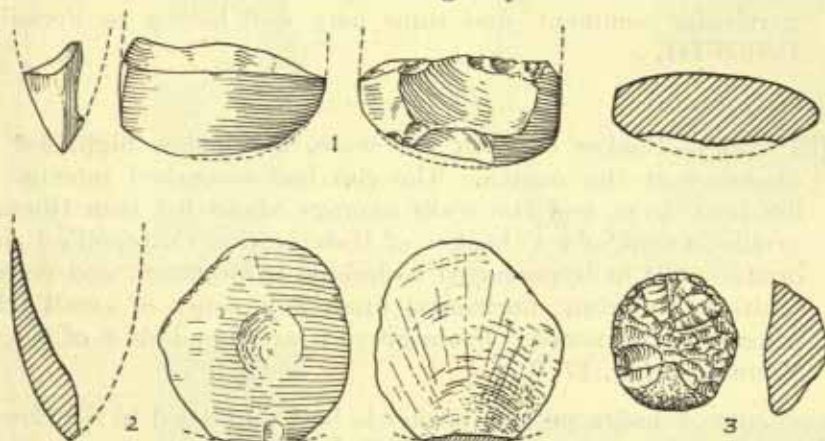


Fig. 16. 1. Stone axe fragment No. 1; 2. Stone axe fragment No. 2 ($\frac{1}{2}$); 3. Flint scraper from old ground surface ($\frac{1}{2}$).

North Wales.² The work of the Sub-Committee of the South-Western Group of Museums has set the question of stone-axe trade in Southern England on a new and scientific footing, and the combined results of petrology and archæology have converged to show that there is every likelihood that the duration of manufacture and export from both these factories was relatively short, and confined to the Late Neolithic phase—in Southern English terms, after the end of the Windmill Hill culture, and in a Peterborough-Grooved Ware context.³ In Northern England no systematic survey of the problem has yet been made, but one may note one important site, the North Deighton barrow, N.R., Yorks, where fragments of Langdale and Graig Lwyd axes have been found together in an occupation-layer below the mound, associated with Peterborough pottery, leaf-shaped flint arrow-heads, and a fragment of a knife with polished faces and edge.⁴ The

¹ For the small Stake Pass factory, see *Proc. Prehist. Soc.*, vol. vii. (1941), p. 58; for the larger Pike o' Stickle site, *ibid.*, vol. xv. (1949), p. 1.

² For Graig Lwyd and its products, see *Proc. Prehist. Soc.*, vol. vii. (1941), pp. 60-3, with references.

³ Cf. *Proc. Prehist. Soc.*, vol. xiii. (1947), p. 51; Grimes in *Arch. Camb.*, vol. xc. (1935), p. 189; Stone in *Wills. Arch. Mag.*, vol. lli. (1948), p. 287.

⁴ Unpublished: referred to by kind permission of Mr B. W. J. Kent and Dr Stickland, the excavators.

presence of axes of these imported rocks at Cairnpapple, where suitable stone could easily be obtained from the abundant dolerite pebbles in the local boulder clay, stresses the intrusive character of the builders of the first monument on the site.

7. Small flint flakes, all apparently struck from pebbles of beach flint, were found at several points on the old ground surface beneath the cairn and its enlargement, and burnt chips of flint (EP 163) occurred with the cremation from stone-hole C. They call for no particular comment, and some may well belong to Period II or Period III.

Period II.

8. (EP 172.) Beaker of dark red ware, 6.6 inches high, 4.9 inches diameter at the mouth. The rim has a marked internal bevel, 0.8 inch deep, and the walls average about 0.3 inch thick. The profile is that of a C beaker of B derivation (Mitchell's C_B). The ornament is in hyphenated technique throughout, and consists of multiple chevrons, horizontal lines, and zones of small triangles fringing blank zones. From grave near stone-hole 8 of the Henge Monument (fig. 17, 3).

The scheme of design on this beaker is best paralleled in Scotland by a vessel from Avondow, Aberdeenshire (Mitchell, No. 60),¹ though the small fringing triangles are not present. The deep internal bevel is remarkable, though such bevelled rims, usually less pronounced, are not uncommon on Scottish beakers of Class C. In general, the vessel falls into line with North British C class beakers, and is certainly local in inspiration as well as manufacture.

9. (EP 173.) Beaker of pale red, rather gritty ware, 6 inches high and 5.3 inches diameter at the rim, which has a slight internal bevel. The walls average about 0.3 inch thick. The type is a C_A or actual A beaker. The ornament is carefully executed in hyphenated technique, and consists of zones of herring-bone between horizontal lines, with a double row of vertically hatched lozenges near the rim. From the foot of the North Grave (fig. 17, 1).

Although in generally accepted nomenclature only one beaker of Class A is admitted to exist in Scotland (that from Ballymeanoch, Argyll), there are several C_A vessels that have good claims to be considered as much true A beakers as similar vessels accepted as such from the south of England. The second vessel from the North Grave at Cairnpapple must certainly be classed as A, and this under discussion has good claims to be included as

¹ *Proc. Soc. Ant. Scot.*, vol. lxxviii. (1933-34), pp. 132-89.

well. The vertically hatched lozenges are rare on Scottish beakers, but occur (in a single row) on a vessel from Keir, Belhelvie, Aberdeenshire

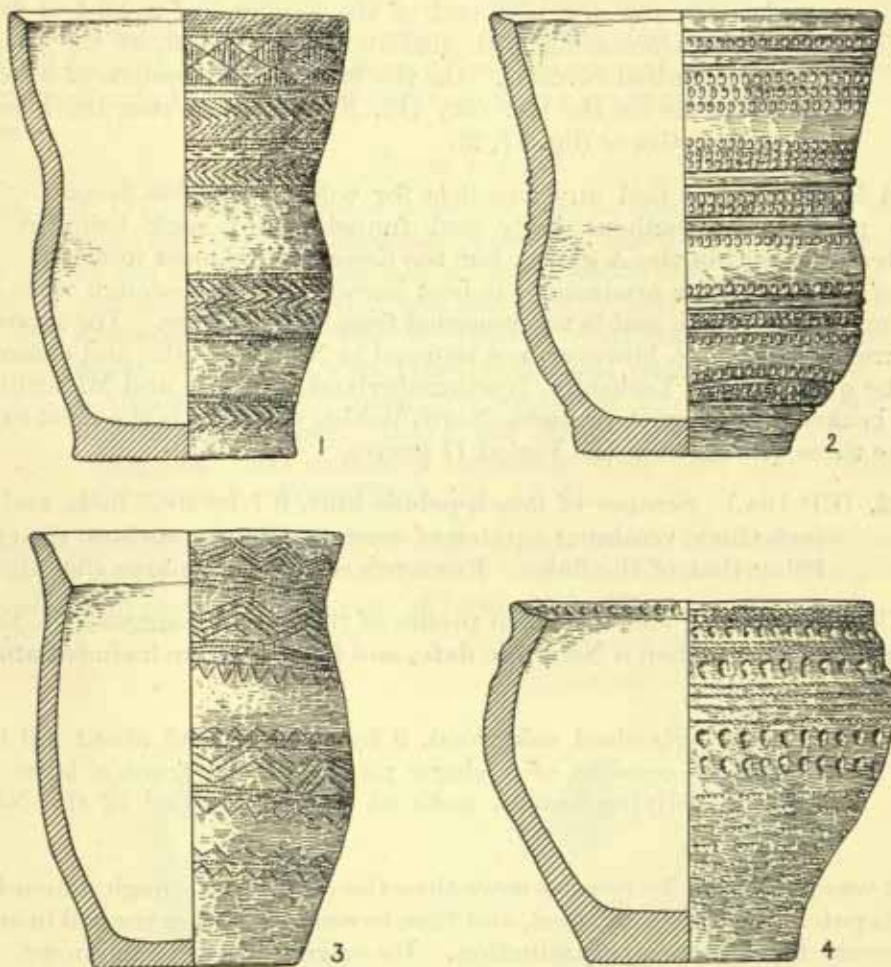


Fig. 17. 1, 2. Beakers from North Grave (Period II); 3. Beaker from grave by stone-hole 8 (Period II); 4. Food-vessel from Cist A (Period III) ($\frac{1}{4}$).

(Mitchell, No. 56). In general terms the vessel is comparable to many North British beakers.

10. (EP 175.) Small fragment of the angle of base and wall of another beaker, found with the foregoing at the foot of the North Grave. The fragment is unornamented.
11. (EP 174.) Beaker of greyish paste, with distinct buff slip, 6 inches high and 6.1 inches diameter at the lip, which is slightly bevelled.

The wall averages about 0.35 inch thick. The vessel is of Class A, and the ornament consists of zones of kidney-shaped impressions made with the articular end of the leg-bone of a bird or small mammal, alternating with shallow grooving and, at the base of the neck, raised cordons. On the base are impressions of bracken leaves made on the wet clay (Pl. XXVI, 1). From the head of the North Grave (fig. 17, 2).

It is difficult to find any parallels for this remarkable beaker. The crisp profile with bulbous body and funnel-shaped neck bring it unambiguously within the A group, but the decoration is most unusual. The use of bird-bones for ornament¹ is best known on Peterborough ware and on some food-vessels, and is not recorded from true beakers. The grooving and use of cordons is, however, not unusual in North Britain, and examples can be quoted from Yorkshire, Northumberland, Durham and Midlothian.² This beaker, though with probable North British affinities, is the most exotic of the three vessels from the Period II graves.

12. (EP 184.) Scraper of beach-pebble flint, 0.7 by 0.65 inch, and 0.3 inch thick, retaining a patch of crust on its upper surface, the other being that of the flake. From top soil in Henge area (fig. 16, 3).

The scale flaking and the steep profile of this scraper suggests an Early Bronze Age rather than a Neolithic date, and it is therefore included among the Period II finds.

13. Object of carbonised oak wood, 9 by 6 inches and about 1.0 inch thick. It consists of a single piece of wood from a large log. Found overlying human teeth at the eastern end of the North Grave.

It was impossible to recover more than the outline and rough dimensions of this patch of carbonised wood, and then to remove it from the soil in small fragments for botanical examination. Its original form is unknown, but it may have been a simple wooden tablet, a cup or bowl, or a ceremonial mask placed over the features of the deceased.

14. Object of carbonised oak wood, 3 feet 6 inches long, 3 inches in diameter at the middle, and expanding into an oval area 6 inches across at one end. The other end may have been similarly expanded, but was in a shredded condition. Found on the north side of the North Grave.

¹ First recognised by D. M. Liddell, *Antiquity*, vol. iii, (1929), pp. 283-91.

² Abercromby, Nos. 149, 167, 177 and 206.

As with No. 13, this object could only be cleared, measured and photographed *in situ*, and then removed as samples for botanical examination. It is a single piece of mature wood and may have been some form of rough club. Alternative suggestions include a paddle, but the mass appeared too solid for such an interpretation. The expansion at the west end seemed on excavation to be the result of distortion in the grave rather than deliberate shaping.

Period III.

15. (EP 177.) Food-vessel of brownish-grey to reddish ware, 5.6 inches high, and the same diameter at the rim, but 6.4 inches in diameter at the shoulder. The wall averages about 0.45 inch thick. The rim is slightly everted, and the slightly hollow internal bevel is decorated with a row of blurred cord-impressed "maggots." Faint vestiges of two grooves remain, each ornamented with a similar row of "maggots" separated by horizontal lines of fine impressed cord. Below the bulge there are two zones of "maggots," and dashes of impressed cord over the remainder of the vessel. From Cist A (fig. 17, 4).

Little comment is possible on this vessel, which typologically comes late in the degeneration series of the vase form of food-vessel. The general type occurs in more than one area of Lowland Scotland.



Fig. 18. Carbonised object from bottom of Cist A (4).

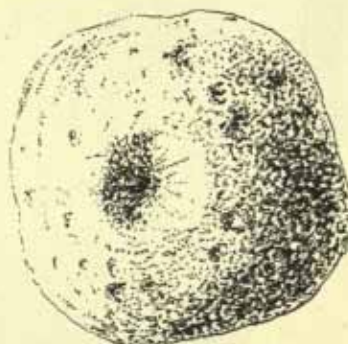


Fig. 19. Maul with battered surface and hollows, material of Period III cairn (4).

16. Object of calcined black material with no trace of vegetable fibre or other structure. It is almost circular in cross-section, 1.25 inches at the base, and its overall length is 2.2 inches. At its narrowest "neck" it is 0.6 inch in diameter. From Cist A (fig. 18).

This curious object was found in a friable state nearly on the bottom of the central cist, towards its southern end. Its substance and purpose are alike unknown.

17. (EP 187.) Cup-marked stone originally forming part of the west wall of Cist A (Pl. XXVI, 2). It has three cup-marks worked on the flat face of the block.
18. (EP 185.) Rounded stone with battered surface and two opposed hollows, probably a maul for stone-dressing. Found among stones of Period III cairn (fig. 19).
19. (EP 186.) Stones each with a single cup-mark, found among stones of Period III cairn (Pl. XXVI, 2).

Period IV.

20. (EP 178.) Cinerary urn of pinkish-buff ware, 11.5 inches high, 10.5 inches in diameter at the rim, and with an average wall

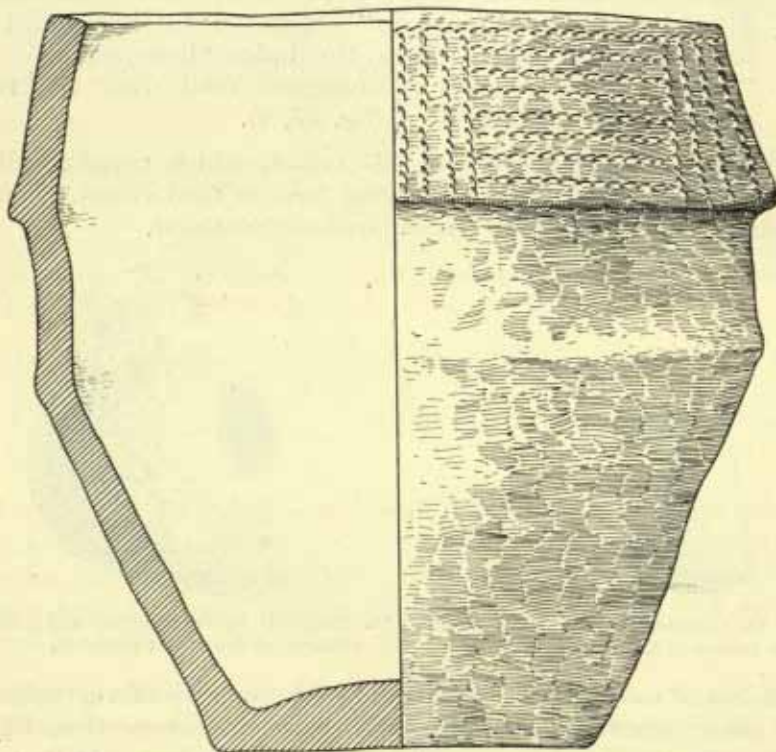


Fig. 20. Cinerary Urn No. 1 from Period IV cairn enlargement ($\frac{1}{4}$).

thickness of 0.5 inch. The collar is ornamented with panels of alternate vertical and horizontal groups of cord-impressed lines. From west side of cairn enlargement (Urn 1) (fig. 20).

21. (EP 180.) Cinerary urn of reddish coarse ware, 16 inches high, 14.1 inches in diameter at the rim, and with a maximum diameter

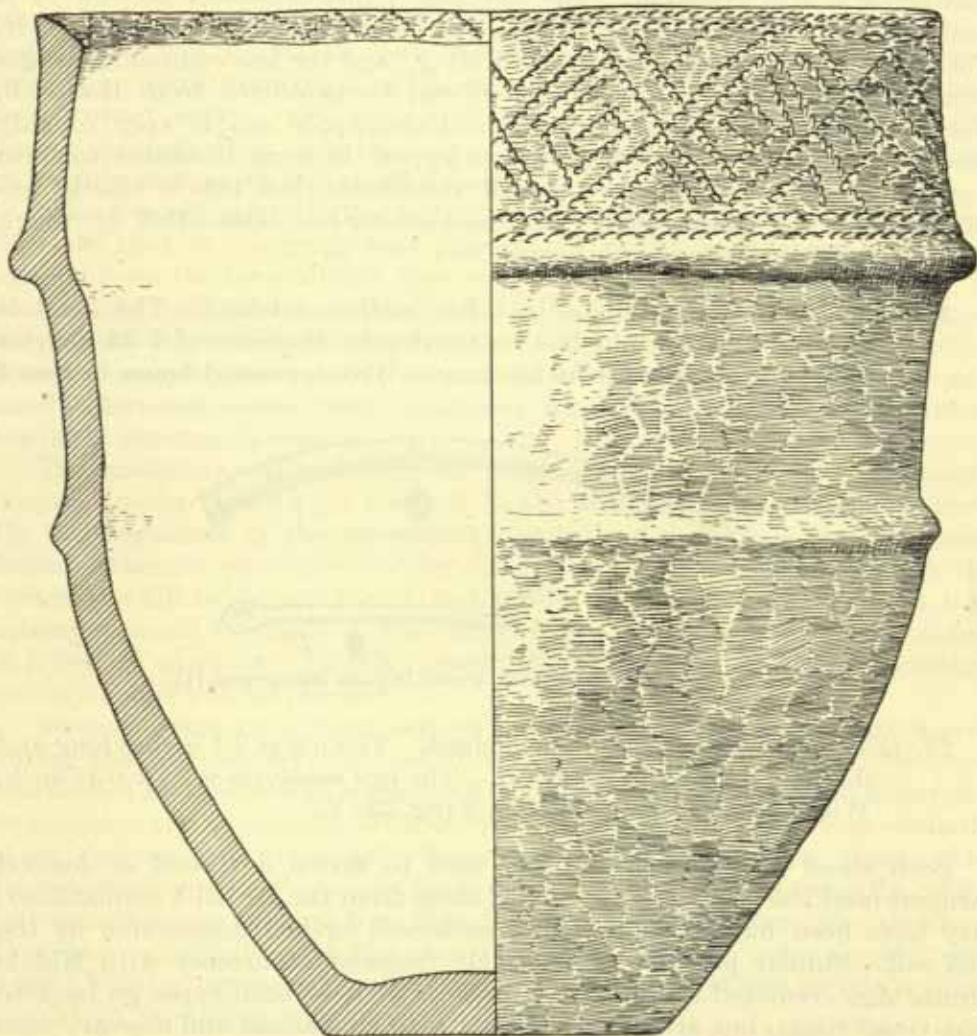


Fig. 21. Cinerary Urn No. 2 from Period IV cairn enlargement (4).

at the base of the collar of 15 inches. The wall averages about 0.6 inch thick. The internal bevel of the rim is ornamented with a single series of cord-impressed chevrons, and the main scheme of pattern on the collar consists of roughly executed lozenges in cord pattern, degenerating, however, into a criss-cross pattern at one point. From south side of cairn enlargement (Urn 2) (fig. 21).

Neither of these cinerary urns calls for special comment: they come fairly late in the typological series, though in both the structural division into three is still apparent. The alternate panel ornament on No. 14 is common, and fairly close parallels can be cited from Hutton Buscel, E.R. Yorks, and Egton Moor, Whitby, N. Riding,¹ and the less common lozenges formed of concentric cord impressions can be paralleled from Rothwell, Northampton.² The ornament on the Cairnpapple urn is very roughly executed, so that the cord impressions appear in some instances to form angular spirals rather than concentric rhomboids, but this is clearly unintentional. A "closing error" in the pattern has been filled by rough cross-lines of cord instead of lozenges.

22. (EP 179.) Large pin of red-deer antler, calcined. The head is missing and the pin has its maximum diameter of 0.35 inch at this point, and is 6.1 inches long. With cremated bones in Urn 1 (fig. 22, 1).

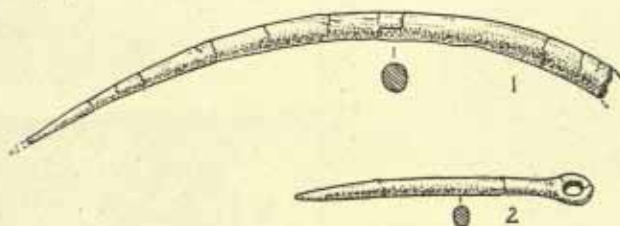


Fig. 22. Pins from Cinerary Urns, Period IV cairn enlargement (†).

23. (EP 181.) Eyed bone pin, calcined. The pin is 3.1 inches long and 0.2 inch maximum diameter. The eye measures 0.2 by 0.15 inch. With cremated bones in Urn 2 (fig. 22, 2).

Both these pins may have been used to fasten a shroud or funeral garment (and the same may be said of those from the Period I cremations): they have been burnt and therefore preserved against destruction by the acid soil. Similar pins are of relatively frequent occurrence with Middle Bronze Age cremated burials: in Yorkshire at least both types go back to food-vessel times, but are also associated with cremations and cinerary urns here and in Southern England.³

¹ Abercromby, Nos. 107c and 102.

² Abercromby, No. 68.

³ Large simple pins of the type of that from Urn 1 were associated with food-vessel inhumations at Garton Slack, B 112 (Mortimer, *Forty Years*, p. 245), and with a cremation at Aldro, B 52 (*ibid.*, p. 62); eyed pins were found with a plano-convex flint knife in a food-vessel barrow on Painsthorpe Wold (*ibid.*, p. 132), with a cremation and food-vessel at Wharrah Percy, B 46 (*ibid.*, p. 44), and with a cremation only at Aldro, B 109 (*ibid.*, p. 58). For Wessex examples cf. Thurnam in *Arch.*, vol. xliii, p. 434.

The Stone-Robbing.

A minor point of interest is the evidence for plundering of the cairn on more than one occasion for stones or in search of treasure. Evidence of disturbance was visible all over the cairn before excavations began, and there is no doubt that much of the stone of the Period III construction had been carted away: this stone-robbing was confirmed stratigraphically during digging, when disturbed areas could be clearly distinguished, filled in roughly with earth and small stones.

A scatter of pottery in the top soil of the cairn and in its neighbourhood suggests that this digging was carried out on at least three occasions, ranging from the later Middle Ages to recent times. The earliest pottery is comparable with that associated with Edwardian coin hoards in Scotland, but should date from the fourteenth to the fifteenth centuries; another group of purple-glazed sherds seem to be of the seventeenth century,¹ and finally there are sherds (and a complete whisky-tot) of Portobello ware of the early nineteenth century.

The medieval material suggests treasure-seeking, and the well-known licenses to dig barrows for treasure in the Middle Ages are apposite here. By the beginning of the seventeenth century, Cairnpapple was becoming famous from its proximity to the silver-mines that were exploited at the foot of the hill to the south-east, and at this time it is more than likely that attempts would be made on the cairn by the miners who were established in a colony adjacent. In this context the apparently seventeenth-century pottery could well be placed.²

Stone-robbing on a more serious scale seems to have been attempted during the last century, for one stone of the Period III kerb on the west was drilled and blasted in a manner associated with sophisticated quarrying techniques, and two stones of the Period IV kerb on the south-west similarly show evidence of unfinished charge-holes being drilled in them. The characteristic brown Portobello ware may well belong to this episode, which fortunately seems to have been abandoned before much stone was obtained. It seems conceivable that the quarrymen thought they were dealing with a solid knob of outcrop and were disappointed to find it was merely a cairn, capable of producing only smallish stones.

DISCUSSION.

It will be convenient to discuss the various aspects of the Cairnpapple Monument by periods, as these each involve a separate structure. The

¹ See Mr G. C. Dunning's report in Appendix G.

² Stephen Atkinson, *Discoverie and Historie of the Gold Mines in Scotland* (Bannatyne Club, 1825); R. W. Cochran-Patrick, *Early Records relating to Mining in Scotland* (1878), p. 37.

problems raised by the variations in the composition of the old land surface can then be examined separately.

Period I.

The features assigned to Period I are perhaps the most puzzling and difficult to understand of any on the site. The recognition of a class of Late Neolithic ritual monuments, including multiple cremations and holes in curved series, has only come within the last three years as the result of the excavations at Dorchester-on-Thames, still in progress. Comparable sites, with the exception of the earlier phase at Stonehenge (bank, ditch and Aubrey Holes), have not so far been identified, though barrow-burials incorporating cremation-cemeteries, such as Duggleby Howe in Yorkshire, are certainly closely linked. Two of the Dorchester sites have a penannular series of holes which seem impossible to explain either as the sockets for stones or for wooden posts, and the Aubrey Holes at Stonehenge, in the past interpreted successively as stone- and post-holes, are really not convincing as either. The holes A-G at Cairnpapple are certainly very similar to what must be stone-holes in the Henge Monument, but in view of their otherwise close relationship to the Dorchester-Aubrey Holes series, one cannot be certain that the "packing-stones" in them are more than an accident of filling, and their precise purpose must be left unexplained: to call them "ritual pits" or *bothroi* does not really advance our understanding of the problem.

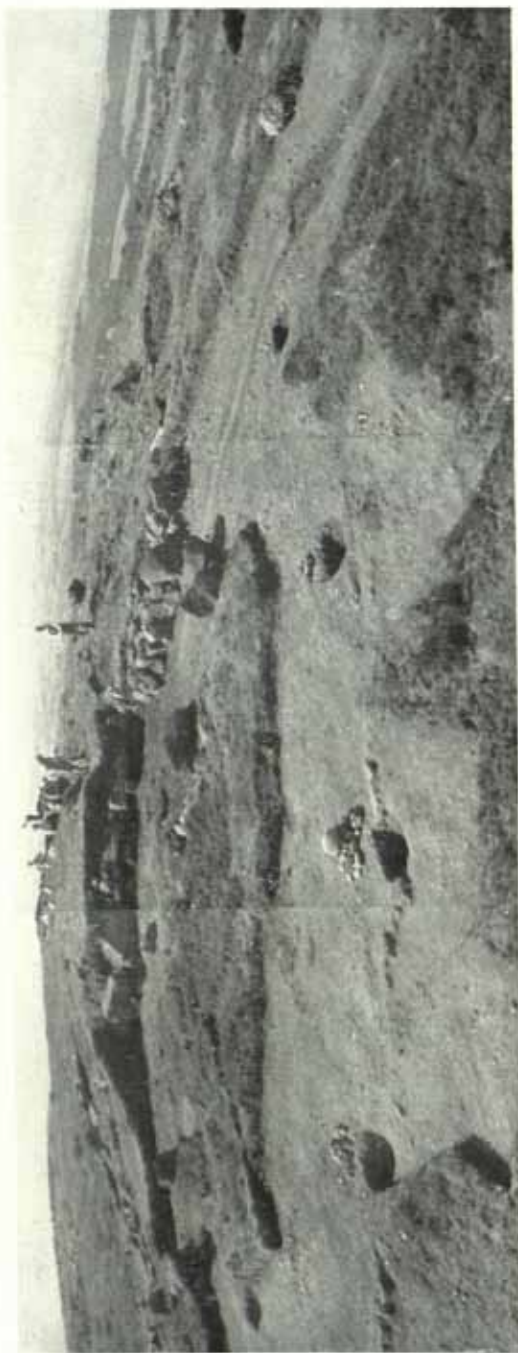
The roughly arc-like plan of the holes A-G is without parallel in known monuments, but it may be worth noting that in certain of the Dorchester monuments and probably at Stonehenge the cremation deposits were not distributed around the whole circuit, but confined to the eastern or south-eastern half: a feature which is comparable and perhaps connected with the similar concentration of secondary cremations of Middle and Late Bronze Age date in many Southern English barrows. The Cairnpapple arc would then represent the "functional" half of a sacred circle, or at least that in which the burials were for some reason concentrated.

While it is difficult to reconstruct the original appearance of the first sacred structure at Cairnpapple, there is little doubt about its affiliations. Holes, cremations and pins all link it to the south of England, and this is strengthened by the presence of fragments of two imported stone axes from an English and a Welsh axe factory respectively. The products of these factories seem to have been in use among people whose traditions fall within the Peterborough-Grooved Ware-Ronaldsway group of Late Neolithic cultures, and it is in this setting that one must consider the first monument at Cairnpapple.

The three holes of the "Cove" seem on the whole more readily acceptable



Cairnpapple Hill: general view of excavated area from the east, 1948, showing stone-holes of Henge Monument (Period II), Late Graves (Period V), and cairn kerbs (Periods III and IV).



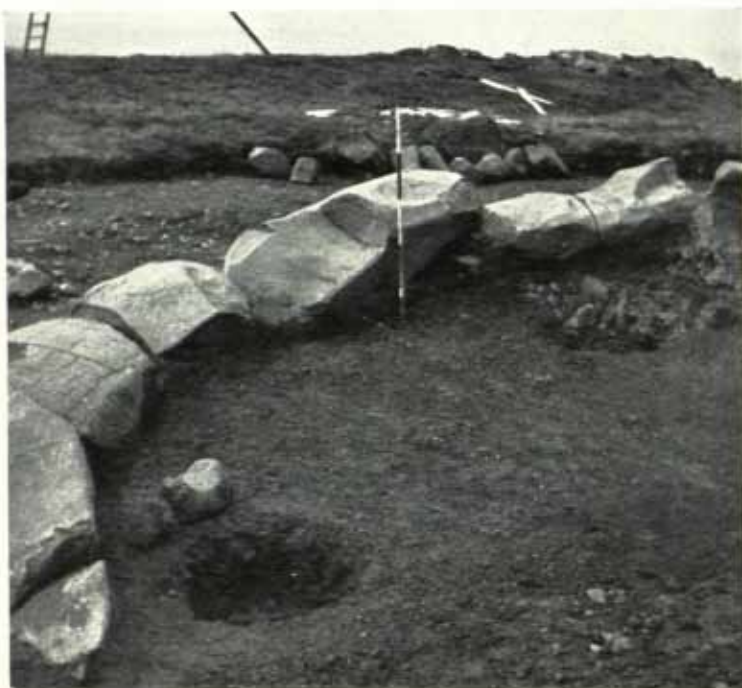
Cairnpapple Hill: excavations in progress showing stone-holes of Henge Monument in foreground,
and beginning of cairn excavation in background.



1. Stone-hole 8 of Henge Monument (Period II) with Beaker grave.



2. Beaker fragments *in situ* in grave by stone-hole 8.



1. Stone-holes 20 and 21 of the Period II Henge Monument
within kerb of Period III cairn.



[Photo: P. R. Ritchie.

2. Area within kerb of Period III cairn showing, from left to right, stone-holes of Period I "Cove,"
North Grave of Period II, Cist A of Period III and (behind) Cist B of Period III.

STUART PIGGOTT.



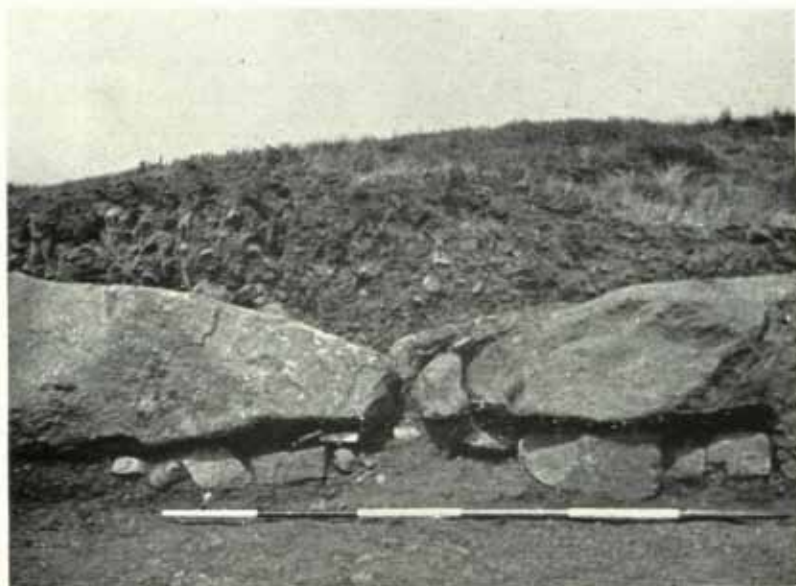
1. Cairn during excavation, showing Period IV enlargement removed and Period III kerb and cairn unexcavated.



2. Period III cairn completely excavated.



The North Grave of Period II, with stone setting, etc.



1. Kerb of Period III cairn on south.



2. Collapsed kerb of Period III cairn on south-east.



1. Cist A (Period III).



2. Food-vessel *in situ* in Cist A.

[Photo: P. R. Ritchie.]



[Photo: P. R. Ritchie.

1. Cist B (Period III) before removal of cap-stone.



2. Cist B after removal of cap-stone.



1. Cinerary Urn No. 1 (Period IV) *in situ*.

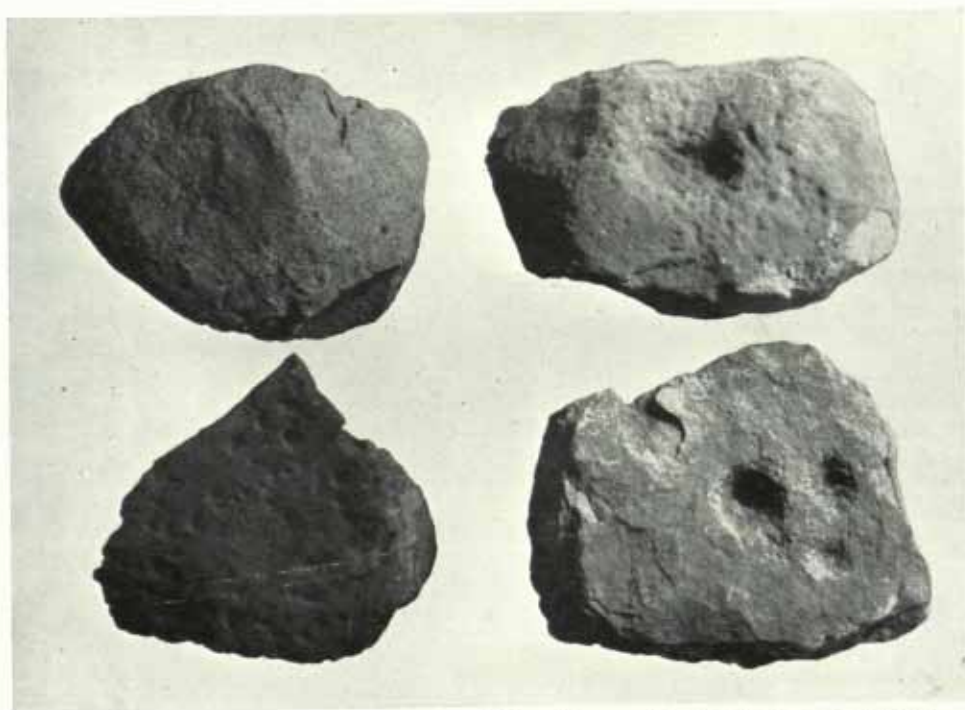


[Photo: P. R. Ritchie,

2. Cinerary Urn No. 2 (Period IV) *in situ*.



1. Base of Beaker from North Grave, showing impression of bracken or fern fronds ({}).



2. Cup-marked stones from Cist A (bottom right) and from material of Period III cairn ({}).

as stone-holes than the A-G series, despite the absence of packing-stones: the absence of any associated cremations should be noted. At present, "three-hole" monuments are not known, whereas three-stone structures having the same plan as the Cairnpapple holes are known from Stanton Drew in Somerset, the North Inner Circle at Avebury and (probably, since the stones are fallen) at Arbor Low in Derbyshire. William Stukeley, studying the Stanton Drew and Avebury monuments, called these structures "Coves,"¹ and it is reasonable to retain the odd name in want of any better. The Stanton Drew cove stands by itself, though near the stone circles and avenues that form the better known antiquities of the site, and at Avebury the cove forms the central feature of the North Inner Circle within the Great Circle with its accompanying bank and internal ditch. While the relationship between cove and circles is obscure in the Somerset site, at Avebury we know at least that the two Inner Circles probably form an early feature of the site, later enclosed in the earthwork and Great Circle,² and that the first phase is likely to be of B Beaker date, like the first phase of the Avenue. At Arbor Low the cove seems an integral part of a double-entranced Henge Monument, and it had an extended inhumation (without grave-goods) at its foot.

We may then consider a free-standing cove of the Stanton Drew type, later enclosed in the Henge Monument rather as the Avebury North Inner Circle with its cove was enclosed, or an early phase of the Henge Monument in which a cove formed an integral structural feature as at Arbor Low (though here eccentric on plan and before long removed with the formation of the North Grave), or finally that a free-standing cove, facing a ritual cremation area, was dismantled before the building of the Henge Monument began. On the whole, the balance of probabilities seems in favour of the last hypothesis, with the cove contemporary with the cremations and holes of Period I.

At this point it may be permissible to turn for a moment to the possible affinities of structures of the cove class. If we do not have to consider them as normal integral parts of Henge Monuments that seem to have Beaker affinities (such as Arbor Low), we may consider connections within Neolithic monuments. The immediate parallel that suggests itself is that of the "false portals" of so many Neolithic chambered tombs—in the Cotswolds,³ in Northern Ireland⁴ and Eire,⁵ and even in the curiously developed form of the recumbent stone and flanking pillars, ultimately derived from the blocked entrance of a Clava type passage-grave, in the north-east Scottish stone circles.⁶ It seems just possible that the cove

¹ See his *Abury* (1743), *passim*.

² *Antiquity*, vol. xiii. (1939), pp. 223 ff.

³ Crawford, *Long Barrows of the Cotswolds* (1925), p. 23; Grimes, *Proc. Prehist. Soc.* (1939), p. 136.

⁴ Evans, *Belfast Mus. Quarterly Notes*, vol. lxiv. (1940), (Lyles Hill).

⁵ Macalister, *Proc. R.I. Acad.*, vol. xxix., Section C (1912), pl. xvii. (Carrowkeel Carn E).

⁶ Keiller, *Megalithic Monuments of North-East Scotland* (1934).

monuments may represent ritual portals, standing alone from any cairn or burial chamber but preserving some significance or funerary function.

Period II.

In most respects the Period II structures constitute a fairly normal Henge Monument of the double-entrance class, best typified by Arbor Low¹ in Derbyshire, which in fact seems the best parallel to Cairnpapple in plan and proportions, as well as being geographically the nearest comparable site to the south. The rather irregular quarry-ditch with its more regular outer bank, and the enclosure of an oval rather than a circular area, are features common to the two sites, though the wide berm between bank and ditch is less marked in the Derbyshire monument. It is clearly present, however, in comparable Southern English monuments such as The Devil's Coits at Stanton Harcourt² and (less markedly) Avebury.

The oval stone setting again is present at Arbor Low, although the plan is less precise owing to the stones having all fallen prone while the stone-holes have not been excavated. But it is clear that at Arbor Low the stones certainly continued at fairly close spacing without a break across the south entrance in the bank and ditch at least, though there may have been a gap nearly opposite the northern entrance. This suggests comparison with the Cairnpapple plan, where the stones continue without a break across the north entrance, but have an "entrance" on the south. As Cairnpapple is at present the only double-entrance Henge Monument where the total plan of stones or stone-holes is really known, one does not know how frequent this feature may be, but it does suggest an interesting link with the single-entrance Henge Monuments, such as those with wooden posts (*e.g.* Arminghall) or with "ritual pits" (Dorchester), and even perhaps with the mysterious "horseshoe" settings at Stonehenge itself.

Arbor Low lies just over 200 miles south of Cairnpapple, and in Scotland the nearest comparable monument, on a very small scale, is the well-known site of Broomend of Crichtie in Aberdeenshire,³ about 100 miles to the north. A site revealed by air photography near Middlebie in Dumfriesshire has every reason to be regarded as a double-entrance Henge Monument, but without excavation this cannot be claimed with certainty as the nearest comparable site to Cairnpapple.⁴

The grave adjacent to stone-hole 8 is comparable with these of Beaker date found near several stones of the West Kennet Avenue at Avebury,⁵

¹ H. St G. Gray in *Arch.*, vol. lviii. (1903), p. 1.

² W. F. Grimes in *Oxoniensia*, vols. viii./ix. (1923-24), pp. 24 ff.

³ J. Ritchie, *Proc. Soc. Ant. Scot.*, vol. liv. (1919-20), p. 154.

⁴ This site, originally discovered and photographed from the air as a crop-mark by Dr K. St Joseph, is now under grass. It was visited by the writer and Mr R. J. C. Atkinson in November 1949 and found to have a wide ditch with external bank, some 240 feet in diameter, and two opposed entrances.

⁵ *Antiquity*, vol. x. (1936), pp. 422-4.

and its isolated position on the east of the circle suggests comparison with the Beaker burial against one stone-hole of the Sanctuary Monument in the same complex, similarly in isolation on the east of the circle.¹ An important point is that this grave at Cairnpapple, as well as the North Grave, was dug into the rotted rock, and was not slab-lined to convert it to a cist. This is a technique quite foreign to the Beaker burials previously recorded from Lowland Scotland, which are normally in some form of stone-built cist, but it is precisely the manner of digging Early Bronze Age graves in the chalk country of the south of England, and again on the Yorkshire Wolds. One cannot insist on a parallel that may be fortuitous, but the technique may constitute another link with the south.

The North Grave as a whole is without parallel, but Early Bronze Age extended burials are not unknown in North Britain, and the Scottish examples of this rite have recently been listed by Childe.² Wooden objects were probably of more frequent occurrence in graves than the earlier and more haphazard excavations would lead one to believe, and Mortimer recorded a wooden object 2 feet 6 inches long and 2 to 3 inches in breadth in a grave with two Food-vessel burials at Riggs, E.R., Yorks.³ The layer of wood over the face of the body is very curious, and although it could represent a simple slab of oak, or a bowl, it does seem more likely that it was in fact a carved and perhaps painted mask comparable with those used in ritual performances by many modern primitives.

Period III.

The Food-vessel cairn of this period at Cairnpapple has an excellent parallel in the Greenhill Cairn, Balmerino, Fife.⁴ Here the cairn, 50 feet in diameter, was on a hilltop, and had a kerb of boulders—not so large as the exceptional Cairnpapple stones, but more of the proportions of the kerb of the Period IV enlargement. There was a nearly central cist that had been robbed of its contents, but also within the kerb and apparently contemporary were a number of Food-vessels accompanying both burnt and unburnt burials. A large stone was found to cover "a rudely rectangular pit . . . sunk in the subsoil to a depth of about 8 or 9 inches" containing a Food-vessel interment, and this is clearly comparable to Cist B at Cairnpapple, which was structurally nothing more than a shallow pit in the top soil lined with lumps of rock and covered by a large slab. The multiple kerb-walls within the Bronze Age cairn at Inverlael, Ross-shire, appear to have been contemporary one with another. Here again was one approximately central and one eccentric cist.⁵

¹ M. E. Cunington, *Wills. Arch. Mag.*, vol. xlv. (1930-32), p. 313.

² *Scotland Before the Scots* (1946), p. 119; for Yorkshire examples, Mortimer, *Forty Years*, p. xxxvi.

³ *Forty Years*, pp. 172-3. ⁴ Hutcheson, *Proc. Soc. Ant. Scot.*, vol. xxxvi. (1901-2), p. 635.

⁵ *Proc. Soc. Ant. Scot.*, vol. xlviii. (1913-14), p. 112.

The Cairnpapple evidence clearly indicated that the kerb was a feature tended to show as a monumental *podium* to the cairn to which it served as a retaining wall—ineffectually on the north-eastern side as subsequent events were to show. Such a great kerb is almost megalithic in conception, recalling the western Irish cairns such as that at Heapstown, which are themselves related to the passage-graves of the Carrowkeel type.¹

There seems no parallel recorded for the phenomenon of the robbing of a megalithic monument for its stones to build a later cairn. A partial parallel, showing perhaps something of the same mixture of veneration and sacrilege towards an earlier sacred structure, is the removal of the kerbstones of an earlier cairn to provide material for the kerb of the enlargement at Talbenny, Pembrokeshire;² while it must be remembered that at Arbor Low a cairn containing a burial with two Food-vessels was built on and at the expense of the bank of the Henge Monument near the northern entrance; and again at Eggardon in Dorset a later barrow defaces the bank of what may be a Henge.³ The reuse of Henge sites for later burials may not be so uncommon as it appears at first sight. A monument not far from Cairnpapple, that at Newbridge, Midlothian, where a cairn or barrow stands within the remains of a stone circle, may again represent the same sequence.⁴

An unusual feature at Cairnpapple was the cup-marked stone originally forming part of the walling of the central cist (A). At Simondston in South Wales, a cist in a large cairn containing cremated burials under inverted vessels of Food-vessel derivation had a very similar stone to that from Cairnpapple as part of its walling,⁵ and affords a nearer parallel than cup-marks on the cover-stones of cists known from several Food-vessel burials. Cup-marked stones scattered in the material of the cairn are recorded from the Breton "dagger-grave" cairn of Cruguel in the Morbihan,⁶ broadly contemporary with the British Food-vessel culture, and isolated stones each with a cup-mark have been found in several North English barrows in Yorkshire, Derbyshire and Northumberland.⁷

Period IV.

We can now recognise as common in the British Bronze Age the practise of enlarging an earlier burial mound to accommodate later interments, and examples in earth and stone construction can be quoted from Hamp-

¹ Piggott and Powell, *Journ. Roy. Soc. Antiq. Ireland*, vol. lxxvii. (1947), p. 144.

² Fox, *Arch. Journ.*, vol. xcix. (1943), p. 1.

³ S. and C. M. Piggott, *Antiquity*, vol. xiii. (1939), p. 151.

⁴ Royal Commission on Ancient Monuments (Scotland), *Midlothian Inventory*, No. 131.

⁵ Fox in *Arch.*, vol. lxxxvii. (1938), p. 132.

⁶ *Rev. Arch.* (1890), p. 304; *Proc. Prehist. Soc.* (1938), p. 100.

⁷ In Sheffield Museum (Bateman Coll.) from Elkstone, Pickering and The Brund (Greenwell, *British Barrows*, p. 342, with refs. to several other sites).

shire¹ and South² and West³ Wales. In the absence of scientific excavation of Scottish cairns, it is difficult to quote more local parallels, but it may be mentioned that the Auchterhouse cairn near Dundee⁴ may have had a similar sequence with the Early Bronze Age cist-burial contained within a kerb which on excavation appeared as an inner stone setting, later enlarged with a new and smaller outer kerb. At all events, the cairn enlargement at Cairnpapple marks a point where all vestige of sanctity must have vanished from the remains of the Henge Monument (if any survived the making of the cairn of Period III), for the enlargement is built over its disregarded ditch.

The kerb to the enlargement is a much less monumental affair than that of the earlier cairn, and Fox has commented, in the Talbenny barrow, on "the decay of the fine traditions of craftsmanship in the structural use of unwrought stone . . . as the Bronze Age developed." Such is certainly the case at Cairnpapple, though one must remember that the finest stones within a reasonable distance of the hilltop had doubtless been collected by the makers of the Henge Monument and reused by the builders of the Period III cairn. By the time of the cairn enlargement, the choice of boulders had probably been considerably reduced.

The occupation-soil around Cinerary Urn 2 is an interesting feature, likely to have been more common than the uncritical excavation reports of the last century, on which so much of our comparative knowledge rests, would lead one to suppose.

Period V.

The four graves that constitute the activity of this period are in the nature of things very hard to date. They presumably held extended inhumations, but no grave-goods survived, if they originally existed. We have to be content with analogy, and fortunately there are satisfactory parallels, or partial parallels at least. Raftery has studied a group of "long graves" in Ireland, and has given reasons for assigning the bulk of these to the Iron Age, and has cited certain Scottish examples of comparable graves.⁵ Nearest to Cairnpapple is the extended burial at Blackness Castle, with a bronze penannular armlet,⁶ and in publishing this find Richardson drew attention to the Burnmouth, Berwickshire, burial,⁷ where the body in a long grave was accompanied by a pair of bronze "spoons" of a well-known Iron Age type not likely to be earlier than the first century A.D. On the

¹ Beaulieu Barrow IV (*Proc. Prehist. Soc.*, vol. ix. (1943), pp. 1-27).

² Sutton, Glam. (*Arch.*, vol. lxxxix. (1943), pp. 89-126).

³ Talbenny, Pems. (*Arch. Journ.*, vol. xcix. (1943), pp. 1-32).

⁴ *Proc. Soc. Ant. Scot.*, vol. xxxii. (1897-98), p. 205.

⁵ *Proc. R.I. Acad.*, vol. xlv. Section C (1941), pp. 299-315.

⁶ *Proc. Soc. Ant. Scot.*, vol. lix. (1924-25), p. 116.

⁷ *Ibid.*, vol. lviii. (1923-24), p. 143.

whole, then, it is likely that the four long graves at Cairnpapple belong to the Scottish Early Iron Age, though probably contemporary with the Roman occupation. They are hardly likely to be Christian, despite their east-west orientation, for the remote hilltop has neither tradition nor tangible remains of early Christian sanctity.

If their presence within the area of the ancient Henge Monument is not accidental, they must imply some sort of tradition of pagan sanctity: that the hilltop with its earthworks and cairn was a *locus religiosus* at least, if not *consecratus*, in Early Iron Age times. There is evidence of a revived interest in Henge Monuments, in Southern England at least, during Iron Age and Roman times,¹ and it is possible that the feeling was as widespread as our insular version of Celtic religion itself.

If the slender evidence of four graves, dated on analogies alone, can be taken in this sense at Cairnpapple, it is perhaps permissible for a moment to step from relatively firm ground to the dangerous but attractive quicksand of theory. One of our place-name sources for Roman Britain is an anonymous list of places within the Empire compiled at Ravenna in the sixth century A.D. or later, and almost certainly copied from a map.² On or near the line of the Antonine Wall the Ravenna Geographer gives a list of ten places, *ubi et ipsa Britannia plus angustissima de Oceano in Oceano esse dinoscitur*, which he says are joined by a road in a straight line—*recto tramite una alteri connexæ*—implying some sort of a line drawn on his source-map.³ It is extremely difficult to identify these sites with the Antonine Wall forts, which would be one's first inclination, and all one can say is that they are in its vicinity, perhaps some of them being on it.⁴ One site is called *Medio Nemeton*, using the Old Celtic word *nemeton*, which had the significance of an open sanctuary in the Celtic religious tradition and not a roofed temple in the Roman manner: the modern Gaelic word for "sacred" (*naomh*) derives from the same root.⁵

Is it possible, then, that Cairnpapple Hill was the *Medio Nemeton* of the Ravenna Geographer—the Middle Sanctuary whence one looked across Britain at her narrowest, from sea to sea? It is a speculation hardly capable of proof, and must remain as nothing more than an attractive possibility.

The Evidence for Climatic Changes during the Site's History.

In the body of the report it has been recorded that under the bank of Period II and the cairn of Period III a considerable deposit of natural clay

¹ *Ozoniensia*, vol. v. (1940), p. 166; *Antiquity*, vol. xv. (1941), p. 305.

² The British portion of the Ravenna Geographer has been published with critical comment by I. A. Richmond and O. G. S. Crawford in *Arch.*, vol. xciii. (1949), pp. 1-50.

³ *Ibid.*, p. 19.

⁴ Macdonald, *Roman Wall in Scotland* (2nd ed. 1934), p. 189.

⁵ Cf. W. J. Watson, *Celtic Place-Names of Scotland* (1926), pp. 244-250.

was found covering the solid rock surface, but that no such layer occurred under the cairn enlargement of Period IV nor over the interior surface of the Henge Monument. Furthermore, Mr Anderson has noted that at the present day the hilltop is denuded of clay, though it approaches to within 120 feet of the monument on the hill-slope, below which it forms a continuous capping.

These facts suggest that in Periods II and III at Cairnpapple the hill was still covered with a thin capping of boulder clay, but that denudation had taken place before the Period IV enlargement was added to the cairn. The fact that the silting of the Period II ditch everywhere suggested rapid deposition as water-borne material, and in parts consisted of re-deposited clay, would be in favour of such a "wash-out" carrying away the clay capping from the domed rock surface within the ditched area except where it was protected by the Period III cairn.¹

The circumstances in fact imply a period of climatic deterioration, with increased rainfall, between Periods III and IV—archæologically, between the Middle and Late Bronze Age, on conventional dating between 1500 and 1000 B.C. Such a climatic change would leave traces in natural deposits such as peat-beds in the form of a "boundary-horizon" between humified old peat and fresh younger peat, the latter being laid down in cool wet climatic conditions. Now research in Southern Sweden by Granlund and other geologists² has shown the existence of a whole series of such horizons, not less than five in all, and approximately dated from 2300 B.C. to A.D. 1200. In Britain it seems very probable that the same sequence can be followed in peat deposits, and one such boundary-horizon has been observed in Somerset, Shropshire and Yorkshire in a position that brings it into our Middle Bronze Age and equates it with Granlund's horizon RY IV, dated in Sweden to about 1200 B.C. In England, this horizon occurs at the base of Godwin's Zone VII–VIII of the peat sequence (after Early and before Late Bronze Age), and in Somerset a Middle Bronze Age spear-head was actually found at approximately this level.

There seems good reason therefore for believing that a temporary period of climatic deterioration, with increased rainfall, did in fact set in somewhere in the Middle Bronze Age of Britain. Such a phase should provide precisely the circumstances that the Cairnpapple phenomena of denudation and silt deposition demand: the more so if the site had been cleared of woodland and kept open. While finality cannot be expected in such an inquiry, the evidence does suggest that circumstances at Cairnpapple are at least not inconsistent with a correlation with bog stratigraphy in other parts of Britain.³

¹ This would also contribute to filling up the pit complex of Period II.

² Summarised, with comment on comparable British phenomena, by H. Godwin in *Proc. Prehist. Soc.* (1936), pp. 1–11.

³ For analyses of the soils and silt from Cairnpapple, see Appendix B.

TECHNICAL APPENDICES.

APPENDIX A.

Report on the Geology and Petrology of the Site. By F. W. ANDERSON,
Geological Survey (fig. 23).

The site stands on Cairnpapple Hill just within the 1000-foot contour. The hill itself is composed of basalt lava flows of the Hillhouse type inter-

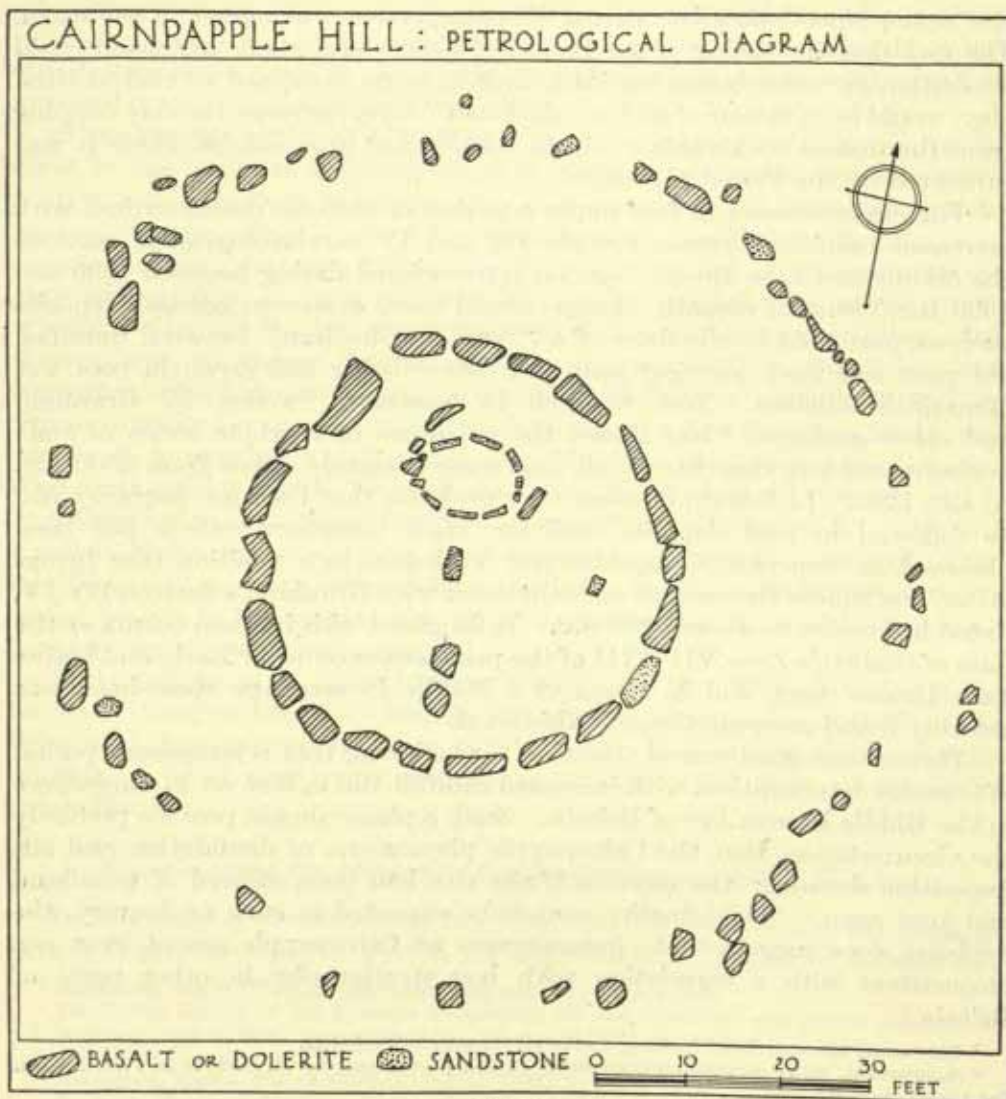


Fig. 23.

EXCAVATIONS AT CAIRNPAPPLE HILL, WEST LOTHIAN. 121

bedded with Lower Carboniferous sediments. The dip is westwards between 20° and 30° .

The sediments which outcrop in the valleys east and west of the hill consist of sandstones and shales with limestones; on the east side of the hill the Petershill limestone outcrops not far below the base of the lavas. The surrounding countryside is largely covered by boulder clay, and though the crest of Cairnpapple Hill is clear, the clay clothes its eastern and western flanks, in places to within 120 feet of the summit.

The majority of the stones used for building the structures on the site are either Hillhouse basalt or quartz dolerite from a neighbouring sill. The remainder are a hard calcareous sandstone (Kingle) derived from local Carboniferous sediments. They are all deeply weathered, and therefore most likely to have been derived from the glacial drift and not quarried. The hill-slopes would probably have been covered with erratic blocks of these rocks. Cist A had a lining of sandstone blocks and a basalt capstone.

On the western side of the site the basalt varied from hard compact rock, through weathered platy basalt to rotten rock reduced to a brown sand full of cuboidal fragments of basalt, and the ditches, stone-holes, graves, etc. were mainly dug into this rotted rock.

APPENDIX B.

Report on Soil Samples from Old Ground Surface. By A. M. SMITH, Ph.D., D.Sc., Department of Agriculture, University of Edinburgh.

Samples were submitted from the clay beneath the cairn of Period III (A), from beneath the Henge bank of Period II (B), and from the clayey silt of the Period II ditch on the north (C).

The mechanical analyses gave these results, as percentage of air-dried material:

	Diameter.	A.	B.	C.
Coarse sand	(2.0-0.2 mm.)	30.1	27.6	22.0
Fine sand	(0.2-0.02 mm.)	35.2	30.8	25.1
Silt	(0.02-0.002 mm.)	20.0	24.0	29.8
Clay (less than 0.002 mm.)		10.8	13.1	20.1
Loss on ignition		3.8	5.8	2.3

There was no carbonate in any sample, so the loss-on-ignition figure is a good approximation to the amount of organic matter in each case. A and B are rather similar in physical composition; C contains much more of the finer fractions.

The chemical analyses showed very small amounts of available plant nutrients and a moderate to severe degree of acidity.

We cannot say whether the old land surface was under forest or open moorland.

APPENDIX C.

The Cremated Human Remains. By W. C. OSMAN HILL, M.D., Department of Physical Anthropology, University of Edinburgh.

With regard to the incinerated bones from Cairnpapple, I am afraid the report is rather disappointing in view of the fragmentary nature of the material.

There is no evidence that more than one individual skeleton is represented in any one batch—in fact in most batches only parts of an individual could be recognised; the general run seems to be a few cranial fragments and bits of limb bones in each collection. Cremation No. 2 contained several vertebral bodies, together with a few cranial fragments.

Cist B contained the only evidence of the type of individual represented: this was in the form of the symphyseal region of a mandible of a small youngish adult, possibly female. There was a well-developed mental prominence on this mandible, which is suggestive of a Nordic type of skull.

APPENDIX D.

Plant Remains. By M. Y. ORR, Royal Botanic Garden, Edinburgh.

Wood carbonised by natural processes or by fire was submitted from the following locations:—

Period II. Wood of oak (*Quercus* sp.) could be identified from the following:—

1. Object lying on north side of North Grave: derived from a large piece of wood or stem.
2. Object covering human teeth in North Grave: part of a fairly large stem.
3. Layer over beaker at foot of North Grave.
4. Layer of charcoal in ditch silt on west.
5. Mixed with hazel charcoal in hearth under Henge bank on west.

Period III. Wood of hazel (*Corylus Avellana*) could be identified from the following:—

1. Mixed with oak charcoal in hearth under Henge bank on west.
2. From four hearth-sites within the Henge area.
3. From the silt of the Henge ditch west of the south entrance.

Period IV. Wood of hazel could be identified from the occupation-soil surrounding Cinerary Urn No. 2.

Samples of the clay used in the make-up of the Period III cairn were examined, but apart from fragments of mosses and roots of grasses there were no recognisable plant remains to indicate the source of the clay, though the contents are suggestive of a moist substratum.

APPENDIX E.

Petrological Report on the Stone Axe Fragments. By F. S. WALLIS,
D.Sc., Ph.D., Bristol Museum.

The numbering of the axes is that of the serial index compiled by the Sub-Committee of the South-western Group of Museums and Art Galleries on the Petrological Examination of Stone Axes.

No. 375—*Macro.*—Brownish grey, slightly porphyritic rock.

Micro.—Typical Group VII (Graig Lwyd).

No. 376—*Macro.*—Fine-grained, flinty-looking greenish rock.

Micro.—Typical Group VI (Stake Pass).

APPENDIX F.

The Bone or Antler Pins. By Miss M. I. PLATT, M.Sc.,
Royal Scottish Museum.

Period I.

1. From Hole C. Origin unknown. No natural surface left, but a hard fine texture resembling ivory.
2. From Cremation No. 1. Intermediate in texture between worked antler and the hard structureless nature of the pin from Hole C.

Period IV.

3. From Cinerary Urn No. 1. Worked Red-deer antler.
4. From Cinerary Urn No. 2. Worked Red-deer antler.

APPENDIX G.

The Late Pottery. By G. C. DUNNING, M.A., F.S.A.

The pottery ¹ appears to fall into two groups:

- (1) The smooth grey wares and green glaze look fourteenth to fifteenth century, and resemble much in North England of the fourteenth century or so, and also agree with what is known of pots with Edwardian coin hoards from Scotland.
- (2) Purple-glazed sherds, ? seventeenth century.

¹ The obviously nineteenth-century sherds were not submitted.

VI.

REPORT ON THE EXCAVATION OF A BROCH AT SKITTEN, IN THE KILMSTER DISTRICT OF CAITHNESS. BY CHARLES S. T. CALDER, A.R.I.A.S., F.S.A.Scot. WITH A REPORT ON THE ANIMAL REMAINS, BY MARGERY I. PLATT, M.Sc., ROYAL SCOTTISH MUSEUM, EDINBURGH.

Read March 8, 1948.

The following report on the excavation of a broch at Skitten is submitted by permission of the Ministry of Works, on whose behalf I was privileged to undertake the investigation in the month of May 1940.



Fig. 1. Map showing site.

On land now occupied by Skitten Aerodrome, about $4\frac{1}{2}$ miles north-west of Wick, in the Kilmster district of Caithness, a "Brough" is noted on the Ordnance Survey map, Sheet No. XIX. Situated inland just over one mile from the sea, its location is on the 100-foot contour of the gently rising ground of the Hillhead of Wester, roughly 300 yards east of the main road from Wick to Thurso and 800 yards south-east of the croft of Skitten (fig. 1).

In 1904 it was partly excavated by Sir Francis Tress Barry, who exposed only the western half of the tower.¹ When operations began, the site appeared as a grass-covered knoll about 150 feet in diameter and 9 feet high on a stretch of otherwise flattish landscape, but it no longer exists as a geographical feature. Within an hour or two of the completion of the investigations the broch and its outworks were razed to the ground by bulldozers during the levelling process in the construction of a new aerodrome. Under the stress of war conditions, which made the speedy provision of airfields an urgent necessity, excavations had to be carried out with more haste than could have been desired. Nevertheless, making due allowance for the abnormal circumstances, a very comprehensive survey was made possible through the courtesy of Mr Gane, manager of Wimpeys, Ltd., in extending from day to day a previously arranged time limit of two weeks so far as was compatible with the course of his work.

¹ *Inventory of Monuments and Constructions in the County of Caithness* (1911), Art. 507, p. 146.



1. Outer face of revetment of original rampart with clay core behind.



2. Inner face of revetment of original rampart.



1. Primitive Fireplace, Birsay, Orkney.

[By courtesy of Mr. Robert Rendall.



2. Radial Compartment No. 11, showing inserted packing-stones between broken wall of tower and side slab.



3. Wall of tower on right behind buttress, S; passage and revetment of addition to rampart behind.

CHARLES S. T. CALDER.



1. Interior of tower looking towards entrance; depth of peat ash indicated by square of ash left between hearth No. 3 and sunk box F.



2. Entrance passage, cell and interior of tower.



1. Interior from central hearth looking north-east on sunk-box O, post-hole RX and stone-settings emerging from beneath pavement.



2. Interior in opposite direction after pavement had been further removed, showing sunk-boxes P and Q and additional post-holes.

CHARLES S. T. CALDER.



1. Radial compartments Nos. 10 and 11.



2. View toward rear of entrance, showing compartments Nos. 13 and 1 and end of south branch passage with kerb and pivot-stone *in situ*.



1. Covered branch drain and radial compartment No. 14.



2. Inner end of main drain looking towards central fire-back.



3. Socket-hole behind north check of inner doorway in entrance passage.



4. Pit below hearths H1 and H3 on south side of central fire-back.

CHARLES S. T. CALDER.



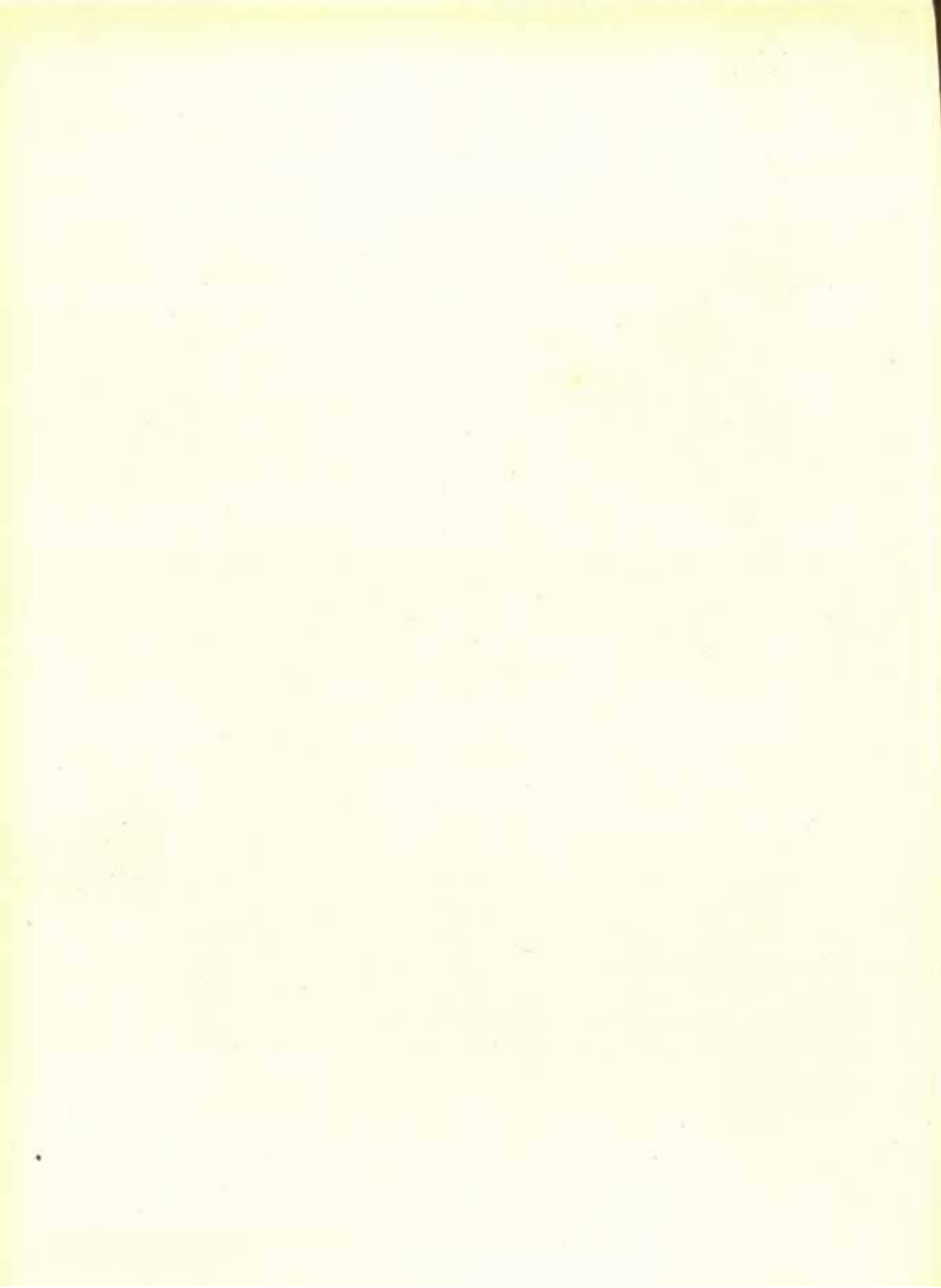
1. Footing of wall of broch on north side of chamber No. I.



2. Chamber No. II: east wall of chamber and entrance passage on right.



3. Chamber No. I: south-east corner, showing wall of chamber abutting against original rampart and backed by core of addition to rampart.



EXCAVATION OF A BROCH AT SKITTEN, IN CAITHNESS. 125

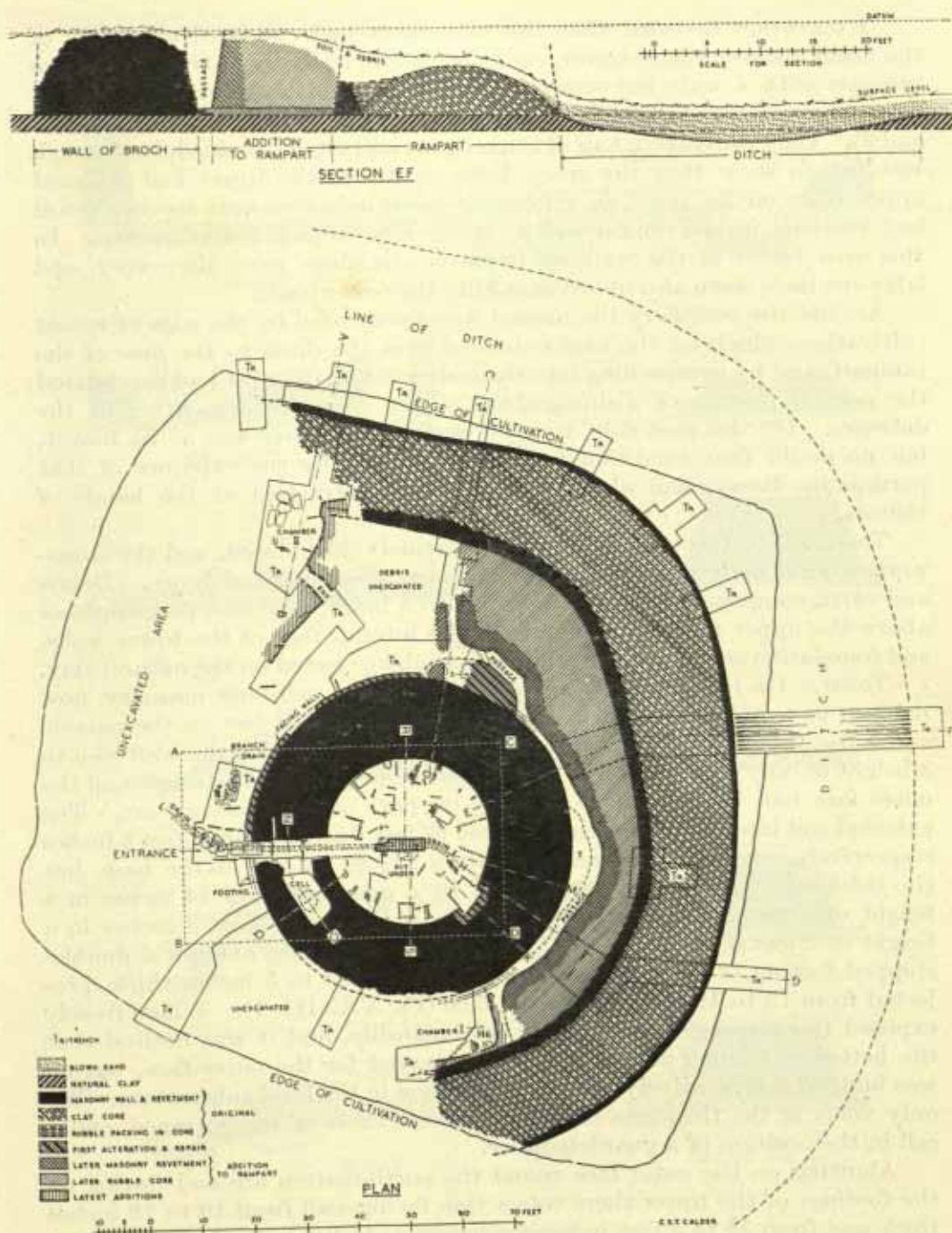


Fig. 2. Plan and Section E-F: north to the top.

Excavation revealed that the monument had consisted originally of the usual massive round tower, encircled eccentrically by a strong defensive rampart with a wide but shallow outer ditch, and that the rampart had been subsequently thickened on the inside by stout additional walling (figs. 2 and 3). Only the eastern half of the rampart and ditch remained, but enough was left to show that the space between it and the tower had widened appreciably on the north in a manner which indicated that the courtyard had attained its maximum width on the west or north-west section. In this area traces of the walls of intrusive chambers were discovered, and later erections were also observed within the tower itself.

Around the periphery the mound was demarcated by the edge of recent cultivation, which on the east extended over the ditch to the face of the rampart, and by encroaching into the courtyard on the west had accelerated the normal process of disintegration to the complete demolition of the defences. On the west side, too, the wall of the tower was at its lowest, but no doubt that condition had been hastened by the exposure of that portion by Barry, and also by thoughtless destruction at the hands of visitors.

The main features generally were extremely dilapidated, and the stonework of local shaly slabs had reached a stage of spalling and decay. Debris and earth compacted to cover the ruins to a height of 5 or 6 feet in places above the upper remaining courses of the interior face of the tower walls, and foundation courses of the original assemblage rested on the natural clay.

Tower.—On plan, the tower had been a ring of well-built masonry, now reduced to a maximum height on the eastern arc of 6 feet on the outside and 4 feet 3 inches on the inside. Diametrically opposite, the wall rose to a height of only 1 foot 6 inches at each end of the entrance passage, and the outer face had been removed entirely on part of the southern arc. The external and internal diameters averaged 62 feet 6 inches and 32 feet 6 inches respectively, and the wall measured from $14\frac{1}{2}$ to 15 feet at the base, but the thickness decreased as it ascended by a good batter of 14 inches in a height of 5 feet on the outer face and by a slight batter of 3 inches in a height of 2 feet 8 inches on the inner face. Around the exterior a double-stepped footing of large stones, each course from 3 to 5 inches thick, projected from 12 to 19 inches from the face (Pl. XXXIII, 1). Where freshly exposed the masonry showed good workmanship, and it was noticed that the better and larger stones had been reserved for the outer face, but all was built of comparatively thin slabs common in the local substratum. The only voids in the thickness of the walls were those of the entrance, and a cell in the position of a guardchamber.

Abutting on the outer face round the north-eastern arc and resting on the footings of the tower there was a thin facing-wall from 10 to 16 inches thick and from $1\frac{1}{4}$ to 3 feet in broken height. At its northern end a heavy

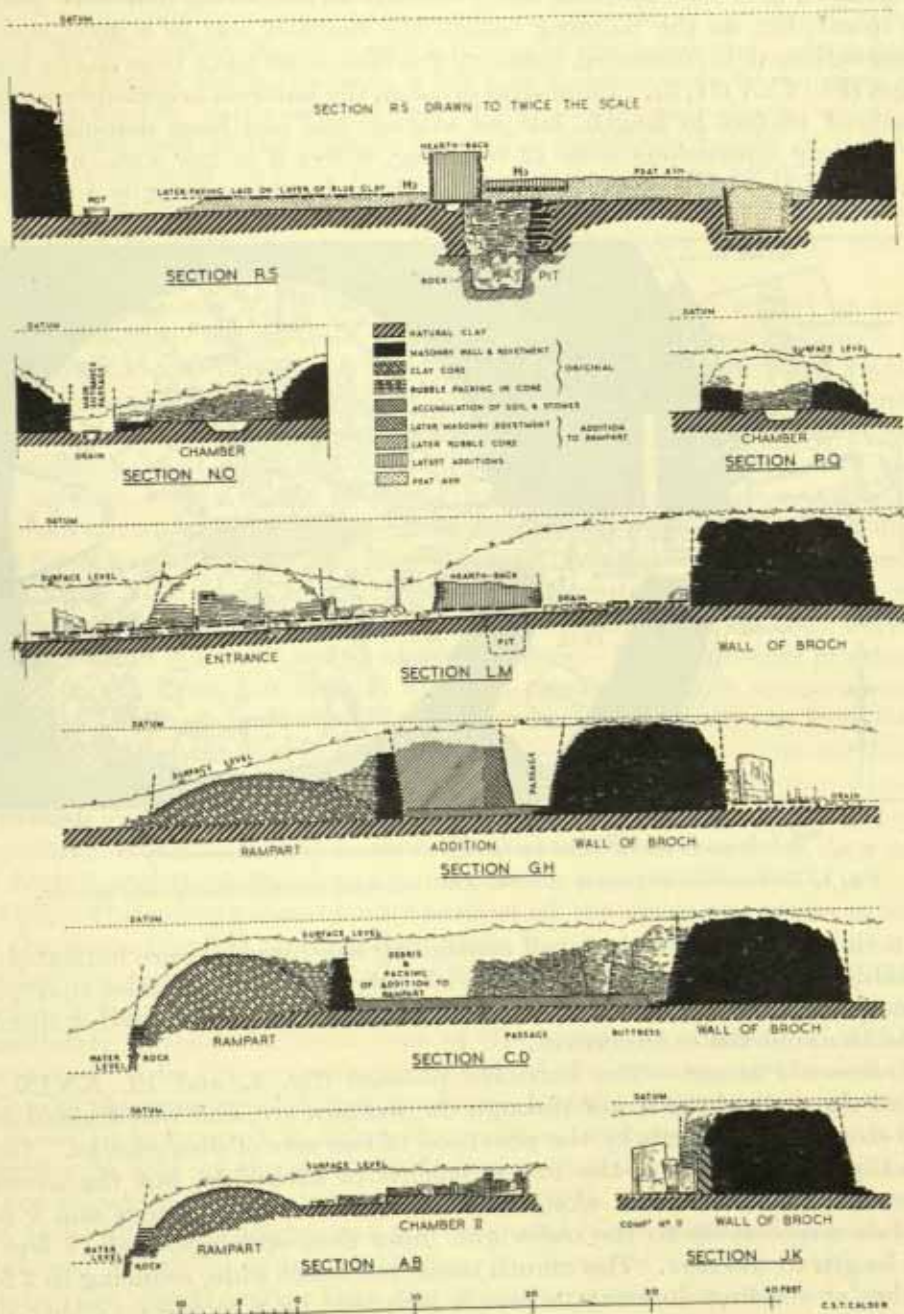


Fig. 3. Various Sections.

buttress, S, had been constructed, evidently to support a defective part of the tower, but as the building behind the buttress was in a good state of preservation, it is concluded that any fracture must have been in the higher stages (Pl. XXVIII, 3). Semi-oval on plan, the buttress originally may have measured 18 feet in length, but its western end had been demolished and the existing dimensions were 12 feet long, 6 feet 6 inches wide, and 2 feet 9 inches high. On the east a second buttress, T, 18 feet long by 4 feet wide,

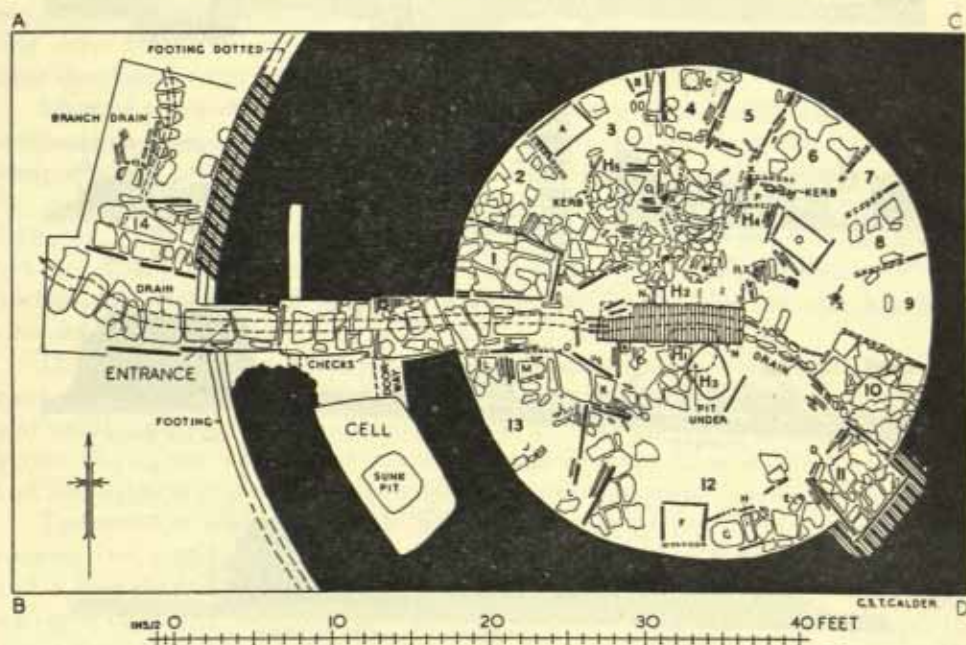


Fig. 4. Enlargement of portion of tower ABCD showing entrance passage and interior.

and a short length of facing wall continuing southwards, were indicated by a tumble of masonry, and more convincingly by the contracted courtyard space reduced to the width of a narrow passage, which followed a sinuous course to avoid the excrescences.

Entrance Passage.—The entrance passage (fig. 4, and Pl. XXIX, 2) pierced the wall of the tower through the western arc, and was divided into three stages in its length by the provision of two sets of door-checks. There were slight variations in the measurements of each side, but the average dimensions from the front along the axis were 3 feet 10 inches and 9 feet 6 inches respectively to the outer and inner door-openings, and 15 feet in total length to the rear. The mouth measured 3 feet wide, reducing to 2 feet 9 inches at the first doorway, where it increased by a rebate on either side to 3 feet 6 inches. From this point to the next checks the width narrowed

to 3 feet, and again widened to 3 feet 10 inches behind the second rebates before finally contracting to 3 feet 4 inches at the inner end. At a height of 2 feet 2 inches above the floor, a bar-hole 9 inches wide by 6 inches high remained on the north side in rear of the outer door-check, where the broken-down wall of the passage reached a maximum height of 2 feet 10 inches as compared with the height of 4 feet 4 inches in 1910 recorded in the *Caithness Inventory*.¹ The corresponding masonry opposite was reduced below bar-hole level, as was also the case at the inner doorway, where it may be inferred other bar-holes had also existed.

The passage was laid with paving-stones, which also served as covers to a central drain below, 10 to 12 inches wide by 7 to 9 inches deep. The pavement followed the run of the drain in a fall of 5 inches from back to front, and consisted of large slabs at the mouth but considerably smaller broken and disturbed stones in the remainder. The drain had been scooped out of the natural clay, and was in some parts loosely lined with small slabs on edge, and in others with two or three courses of stones on bed. It was observed to run on in a north-westerly direction under the rickle of debris some 6 feet from the entrance, where for lack of time the excavations ended.

At each door kerbs obstructed the pavement. The outer kerb consisted of a single slab, 3 inches thick and 15 inches deep, on edge between the checks, and it rose 8½ inches above the floor. Its under-edge penetrated the top of the drain but did not obstruct the flow, and it appeared to be original. The inner kerb was formed of two smaller slabs rising from 6 to 8 inches set behind the checks one on each side of the drain. The northmost slab also formed one side of a socket-hole, 6 inches square by 1 foot 4 inches deep, sunk in the floor and constructed of slab sides and bottom strengthened by packing-stones. It may have been used as the socket for a door-post, and both it and the kerb seemed to have been inserted (Pl. XXXII, 3).

Cell.—The cell or guardchamber entered off the south side of the passage, but the mutual wall, 3 feet 4 inches thick, had been destroyed down to the foundations, and only a few courses of the eastern jamb of the doorway, 3 feet 8 inches in from the interior, were in position to show access had been gained immediately beyond the inner door of the tower. A dimension of 2 feet was judged to be the approximate width of the entrance to the cell, and obviously the opening of 5 feet shown on Barry's plan is much too wide. He seems to have erred in fixing the position of its western jamb "1 foot 10 inches in rear of the door-checks," meaning the outer door-checks of the tower, which are the only ones he mentions. The lateral walls stood from 1½ to 2½ feet in height, and the outer and inner measured respectively 5 feet and 3 feet 10 inches in thickness. Towards the inner end of the chamber the upper courses bore the commencement of an inward beehive batter.

¹ *Inventory of Monuments and Constructions in the County of Caithness* (1911), Art. 507, p. 146.
VOL. LXXXII. 9

In the floor, which was made of clay and was raised 6 inches above that of the passage by a stone step at the entrance, a scooped-out oblong pit, 3 feet 6 inches by 2 feet 10 inches by 13 inches deep, testified to the former existence of the slab-constructed box described by Barry.

The cell dimensions averaged 10 feet long and 5 feet 4 inches wide, these actual sizes being at variance with the length of "some 15 feet" and width of "6 feet 6 inches" as stated in the *Inventory*.

Interior.—The internal area of the tower (fig. 4) was well filled with slab constructions either sunk in the floor or projecting above it, and with settings of small stones on edge. Many were so incomplete that their purpose could not be determined. The main features were paving-stones, radial compartments, sunk-pits, hearths, and the inward continuation of the drain (Pls. XXIX, 1, and XXX, 1 and 2).

Paving.—Two pavement levels in patches were met with in the northern half of the interior, but only one level in the southern. Originally the floor may have consisted solely of clay as was the case in the cell, since underneath the lower paving two sunk-boxes and a pit all filled with rubbish and peat-ash were found. Also the lower paving that survived had been laid mainly round the side of the interior and was only overlapped by the edges of the upper paving, no flags at all having been laid under the central part of the latter.

The lower rested on the natural clay, but the upper was bedded on a layer of puddled blue clay, $1\frac{1}{2}$ inches thick, which in turn had been spread over an accumulation of peat-ash 5 inches thick above the lower level. The upper extended northwards from a centrally situated built fire-back and westwards into two or three of the radial chambers, where both levels were discernible. It covered up some low settings of stones in which there had been post-holes. In a few of the radial chambers paving was well preserved. Some irregularities in the pavement levels tended to confuse the occupation levels, and may have been caused during the earlier excavations by Barry.

Drain.—A fall in the floor of 8 inches from east to west was evidently controlled by the fall of the drain, which continued inwards from the entrance in a direct axial line for most of its length, when it altered course to east-south-east for the last $5\frac{1}{2}$ feet to reach its end abruptly against a radial chamber at a point 6 feet 9 inches from the inner face of the tower (Pl. XXXII, 2). The drain was open from the angle of change to the inner and higher end, and also for some length near the entrance, but the cover-stones may have been removed. Between these open portions it was concealed under the central fire-back, in the masonry of which part of a stone ashet helped to confirm that the fire-back was not an original feature.

Radial Compartments.—From the inner wall-face, thin slab partitions from $1\frac{1}{2}$ to 5 inches thick and embedded radially in the clay divided a series

of thirteen compartments in a more or less continuous ring, broken only by the entrance passage, from which they are numbered clockwise on plan. No. 1 was entirely closed in front by a large high-standing slab, but a gap in the mutual partition between it and No. 2 may have made these two compartments intercommunicating (Pl. XXXI, 2). All the others opened direct from the interior, but some frontal slabs may have been removed, leaving unintentional gaps. Only in the case of Nos. 11 and 13, which were in a better state than the rest, could it be definitely said that a gap had been left for an entrance. Where complete the slabs attained a height of 3 feet 9 inches, but most of them were broken and reduced in range to as low as a few inches above the floor. Some were missing altogether, and there was no evidence that any of the compartments had ever been roofed over. No. 11 was the most intact, and it along with Nos. 1 and 10 was fully paved (Pl. XXXI, 1); Nos. 2 and 3 and probably No. 1 had a second layer of paving, and Nos. 5, 7, and 9 were unpaved, while the remainder were paved only in parts.

In the following details the average width between mutual partitions and length from front to back are stated in that order:—

- No. 1. 3 feet 10 inches and 6 feet 3 inches. A single frontal slab rose to 3 feet 5 inches, and side slabs ranged from 6 inches to 2 feet 4 inches high.
- No. 2. 6 feet 6 inches at back and indeterminate. The north partition was defined only by a groove in the clay where a slab had stood. Access was probably gained in similar fashion to that described for No. 13.
- No. 3. 9 feet 6 inches at back and indeterminate. A slab-constructed box, A, 3 feet 2 inches by 1 foot 11 inches and 2 feet deep, was sunk in the southern corner next the broch wall. Another, B, 13 inches square and 10 inches deep in the corresponding northern angle, was covered by a paving-stone.
- No. 4. 3 feet 10 inches and 5 feet: open-fronted and side slabs rising from 13 to 21 inches high. Resting on a paving-stone at the back of the compartment, fragments of pottery in a ring 11 inches in diameter comprised the lower portion of the wall of a clay pot, C, the bottom of which had disintegrated entirely.
- No. 5. 3 feet 6 inches and 4 feet 6 inches. A short low slab on edge marked the front.
- No. 6. 5 feet 6 inches and indeterminate: front open.
- No. 7. 2 feet 9 inches and indeterminate. Partitions only meagrely defined.
- No. 8. 5 feet and ? 4 feet. Two low slabs and a groove for another between them indicated the southern mutual partition.

- No. 9. 5 feet and 5 feet 10 inches. Much destroyed, but distinguished by a few broken slabs and grooves. The highest slab stood 12 inches above the floor, and a small one set at the north-west corner marked the front, which was otherwise open.
- No. 10. 5 feet and 6 feet 8 inches. Well defined by its paving and a small slab in the middle of the front.
- No. 11. 5 feet and 5 feet. The most complete, but differing from the others in being partly inserted to a depth of 1 foot 9 inches in the broch wall. A large thin slab on edge formed the back and a single one also closed its south side, but there were three in the partition on the north. Two slabs, one on either end of the front and now reduced to stumps, had been set with an interval of 1 foot 10 inches between their edges for entrance. None of the slabs was more than 2 inches thick and each partition rose to a height of 3 feet 9 inches. The courses of masonry of the inner face of the wall of the broch were irregularly finished against the side slabs, and the wider parts of the junction were closed by piecing-up with vertical packing-stones, all suggestive of a patch-up of the wall which had been broken to admit the compartment as an insertion (Pl. XXVIII, 2). A broken stone dish, D, incorporated in the paving also pointed towards later erection. Structurally, therefore, all the compartments are somewhat later than the broch, but from the absence of any pronounced occupation layer under the floor it would seem that their erection had taken place as necessary furnishing improvements at an early stage in the primary occupation.
- No. 12. 14 feet 7 inches and indeterminate. This area may be more accurately described as part of the main floor space. In it a box, F, 2 feet 6 inches square and 1 foot 10 inches deep, was constructed of thin slabs sunk in the clay. The south side of the box was missing, and its east end also formed the end of a shallower box, G, 2 feet 3 inches wide and 2 feet 10 inches long and 10 inches deep to a bottom which was almost wholly covered by a single stone. The sides had extended beyond the eastern end, which terminated in an outwardly sloping stone, H, rising to the level of the pavement in which a pivot-stone, E, had been reused.
- No. 13. 14 feet and 6 feet. This irregularly shaped compartment brings the series back to the main entrance (Pl. XXXI, 2). Barry shows it as one chamber with partitions complete where stones are now missing, but it may have been divided into two

at J. No surviving slab stood more than $1\frac{1}{2}$ feet in height. A passage-way, K, 3 feet long and 2 feet 3 inches wide entered off the main interior. At each end a slab formation partitioned off a small recess, L, and on the burnt pavement in the angle, M, between the north recess and the passage-way a layer of peat-ash indicated that a fire had been in use at some time or other.

Another radial compartment, probably also one of a series on the outside of the tower beside the entrance, was uncovered and is figured No. 14 on plan. It was constructed in front of the facing wall at this part and measured 4 feet in width by 7 feet in length. Three slabs on edge, the highest being 1 foot 6 inches, bounded its south side, but only one 8 inches high was in position on the north, and all had been broken. It was floored with two pavements, one above the other, and the interspace of 6 inches was filled with loose stones and peat-ash. The lower was approximately on a level with that of the tower entrance, and the surface of the upper was 2 inches higher than the top of the tower footing. To the north of this compartment a very few paving-stones were noted at the lower level, and the principal feature was a row of coverstones over the curving length of a branch drain, 5 inches wide and $3\frac{1}{2}$ inches deep, which appeared to run under compartment No. 14 to connect with the main drain (Pl. XXXII, 1). The branch was channelled in the natural clay, and parallel to it on the west an indefinite setting of a double row of small stones were embedded alongside in a spread of peat-ash in which some calcined deer-horn was found. On the side south of the main entrance two slabs set end to end may have represented yet another compartment, as may also a radially set slab on the north-western arc of the tower. No doubt these compartments had been used as beds, larders, and stores, etc. In the lower paving of the interior two or three broken utensils had been used as paving-stones, and from this as well as the fact that a sunk-box in No. 3 compartment was covered by a paving-slab, it would appear that the radials were not primary features. A similar contention has also been made for radial compartment No. 11, but from lack of any measurable thickness of any occupation level below the paved floors, which seemed to sit immediately on top of the natural clay, it may be surmised that no great time had elapsed between the building of the broch and the construction of these compartments.

Remainder of Sunk Boxes.—Of the sunk-boxes not yet described one was complete and two were damaged. The first and largest, lettered O, measured 3 feet 6 inches by 2 feet 2 inches and 2 feet 1 inch deep. An extra slab from 3 to 5 inches from its western end may have been the end of another, but more definitely there were the remains of a second box, P, with one end missing. It was 1 foot 9 inches wide by probably 3 feet 2 inches long, that size being the length of the largest side slab, and it was 1 foot 2 inches deep. Two sides of the third box, Q, were in position under a hearth in front of compartment No. 3. Length and breadth were indeterminate, but it was 1 foot 2 inches in depth. All three boxes were filled in with rubble, earth, and peat-ash, purposely at least in the case of P and Q. On the surface of the infilling of box P a curving row of water-worn stones, presumably the remains of a kerb for a hearth, were embedded, and box Q was covered by the remains of another hearth (Pl. XXX, 1 and 2).

Central Hearth Fire-back.—Between the first and last compartments interiorly the main entrance passage continued for a further 9 feet 3 inches, where its direct advance was obstructed by the end of the central hearth fire-back, N, over the drain (Pl. XXIX, 1). The interruption made a bifurcation necessary for separate admittance to each half of the interior. Each branch was short, and at its narrowest measured only 1 foot 7 inches in width. The southern ended, in line with the access to compartment No. 13, in a kerb 6 inches high, behind which in the angle between kerb and fire-back a pivot-stone deeply set in the floor was *in situ*.

Extending diametrically inwards for a distance of 9 feet 4 inches, the fire-back, 2 feet 6 inches thick, rose to a broken-down top from 1 foot 3 inches to 2 feet above the floor. On each side the facing-stones were much discoloured by burning, and a similar condition obtained in the respective hearths, which were simply the paving-stones without a confining kerb. That the hearth, H1, on the south side had been in use to a greater extent than the one on the north, H2, was borne out by a much thicker layer of peat-ash which had accumulated to a height of 10 inches and covered the whole of the floor on that side right to the inner face of the broch wall between compartments Nos. 11 and 13. In its spread the ash filled and concealed the sunk-boxes in No. 12. Embedded level in the ash above the hearth H1 a large water-worn stone constituted the hearth H3 (Pl. XXIX, 1). It measured 3 feet 2 inches long by 2 feet 4 inches wide and 4 inches thick, and was evidently a renewal of the lower when the peat-ash had gathered to an inconvenient height for the latter's use. It is interesting to note that this type of hearth, with a fire-back which is assigned to the latest occupation of the tower, was still being used in modern times. An example of such a primitive hearth is now exhibited as a museum piece in a cottage at Birsay in Orkney (Pl. XXVIII, 1). It is identical in construction with the hearth

in the broch, and suggests the persistence of the type for approximately 1500 years.

Other Hearths.—Other two hearths on a level corresponding to the lower pavement in the northern half of the interior proved to be of secondary construction, from the fact that they had been placed over destroyed original sunk-boxes. As already mentioned, it was in the eastern one, H4, that part of a row of kerbstones existed in the infilling (Pl. XXX, 1). These kerbstones were each broken at their embedded end to maintain a fairly regular total height of 9 inches, and were set on a curve suggesting an oval-shaped finish with axial diameters of approximately 5 feet and 4 feet 6 inches. Other dislodged stones of this kind were found alongside, but the hearthstones themselves had been destroyed.

Several hearthstones, however, remained in position within the broken kerb of the western hearth H5, which was of much the same size and shape as the other. In the formation of the kerb several rubbing-stones and pounders had been reused and well burnt. On and around the area of both hearths peat-ash covered the lower paving and extended under the upper paving in the centre of the interior.

Pit.—Below the hearths H1 and H3, and also oversailed for a width of 12 inches by the masonry of the fire-back, an earlier and original pit, shown dotted on plan, was discovered. Suboval in shape, it measured 4 feet 9 inches by 3 feet on the axes and it was 3 feet 8 inches deep. The lower 1 foot 4 inches was cut out of the solid rock, and the upper part consisted of the natural clay faced in part with masonry. Almost a third of the hole was filled with a black earthy substance, amongst which there was a large quantity of sheep bones and a few fragments of pottery. From this material upwards, boulders, rubble, and clay had been thrown in to consolidate the foundations of the fire-back (Pl. XXXII, 4).

Post-holes and Stone-settings.—A series of six post-holes were disposed as indicated by the letter X on plan, showing the four southmost in rough alignment in a length of 11 feet 6 inches, the one marked RX being the best preserved. The western three were found under the existing pavement, and the northmost actually appeared in the infilling in the angle of the sunk-box P.

A setting of small stones also emerged when the upper pavement was removed, and it ran from the fire-back to the front of the radial compartments on the north. In their arrangement there was a suggestion of smaller post-holes as if for the studs of a timber partition (Pl. XXX, 1 and 2). A few isolated stones embedded in the floor were too disconnected to be worth further mention.

Rampart.—A length of 300 feet still survived between the broken ends of the original rampart, which was massive in its proportions and varied from 18 to 22 feet in thickness, and from 2 feet on the outside to 5 feet on the

inside in height at the highest points (Pl. XXVII, 1 and 2). The space between it and the tower had been narrowest at its southern end, where it measured 12 feet 8 inches across, and widest at the northern, where its dimension was 28 feet. The rampart consisted of a clay core confined between well-built revetting walls of masonry from 10 to 19 inches thick in the outer and from 1 foot 7 inches to 3 feet 6 inches in the inner. Each outer face of the revetment rose with a batter, mostly from the natural clay on which it was founded, but in places the foundation was on a rocky substratum. In cross-section the clay core appeared outlined as a deep segment of a circle with a rise from 3 to 5 feet. It is probable that it alone constituted the primary defence, the retaining walls being built later, as the angle formed between the surface of the clay core and the inner wall had been filled with rubble after the clay had been thrown up.

Ditch.—On the surface the ditch was barely traceable, as it had been completely covered in blown sand and almost obliterated by ploughing operations. Excavation disclosed that it had been dug through a layer of top soil 10 inches thick, a bed of clay 1 foot 10 inches thick, and into a substratum of shaly rock to a depth of 1 foot, making a total depth of only 3 feet 8 inches in the middle of its width of 34 feet 6 inches. Although acting as a defence, the shallowness makes it appear as if its principal purpose was that of a borrow-pit.

Addition to Rampart.—Against the inner face of the original rampart an additional strengthening wall had been erected. It varied in thickness from 8 to 18 feet, and increased the total thickness of the defence to as much as 40 feet at the widest existing portion. The space between rampart and tower was thereby contracted to a narrow passage, in places only 1 foot 3 inches wide at the footing, but increasing to 3 feet 4 inches in an ascent of 6 feet to the broken-down wall-heads by a batter on the respective wall-faces (Pl. XXVIII, 3). In its course the passage skirted around the irregular excrescences made by the buttresses. The addition was founded on an accumulation of soil and debris, 7 to 9 inches thick, above the natural clay at a level in line with the top of the footing of the tower, and in one or two places rested on paving-stones which projected into the floor of the passage. It was built with a rough core confined within a retaining wall. In this instance the core, from the bottom upwards, consisted of a layer of top-soil approximately 2 feet thick, merging into a layer of clay 1 foot thick, above which it was packed with shaly rubble loosely thrown in. This arrangement of the infilling is in inverse relation to the strata of the ditch, from which the material was probably taken during a secondary widening and deepening. The masonry of the retaining face, built of smaller stones, and of inferior workmanship to that of the tower, rose with a batter of 1 foot 3 inches in a height of 6 feet 3 inches at its highest part (Pl. XXVIII, 3). The face at the southern end curved

round as if intended to return to the inner face of the rampart, and beyond that all was debris, under which the remains of the walling of a later chamber was found. The northern end returned similarly for a distance of 9 feet or so and formed one side of a gap or passage 1 foot 9 inches wide; the other side was represented by the lower two or three courses of a facing-wall which ran in a broken line on plan perpendicular from the wall of the tower and at the same time cut through the earlier buttress at this part. The passage led nowhere in particular, but finished in a rickle of debris about half-way through the strengthening wall.

Later Chambers.—At a distance of 2 feet 5 inches from the southern end of the strengthening wall, the later chamber, No. 1, occupied the space between the tower and the original rampart. It had measured 11 feet 6 inches wide and was 13 feet in broken length. Only parts of its east and south walls remained to heights varying from 1 foot 4 inches to 2 feet 2 inches, and to thicknesses from 7 inches to 2 feet. Built as facing-walls, the eastern had a large boulder in its composition, and was backed by loose stony debris, but the southern abutted against the inner face of the original rampart (Pl. XXXIII, 3). The floor was unpaved and was on a level with the top of the tower footings, which point was 6 to 9 inches higher than the interior of the broch but 3 inches lower than the base of the strengthening wall. A broken slab on edge, 8 inches high by 1 foot 10 inches long and firmed by packing-stones, projected at right angles from and just clear of the south wall-face and 4 feet 3 inches distant from the east wall. In the recess formed by slab and east wall the only paving-stone found was much shattered by burning, and had evidently been used as a hearth, H6, on which was a considerable quantity of peat-ash. At a height of 1 foot 6 inches in the infilling of this chamber peat-ash was also seen, and a later row of slabs on edge indicated a later construction of indeterminate purpose.

The remains of another chamber, No. II, or maybe two connected by a short passage, were uncovered in the courtyard on the north-north-west side of the tower (Pl. XXXIII, 2). Comparatively short lengths of their inner facing-walls backed against the debris only were left, and these petered out without trace of their ultimate shape and size. The masonry of the chamber rose from a few inches on the north to 2 feet in the passage above a floor which was mainly clay with only a few paving-stones at the north end, and which lay on practically the same level as the general interior of the tower. Slab construction was incorporated in the walling, which was undoubtedly of the latest period of building, as the chambers had encroached through the debris of the strengthening wall right into the original rampart when these had become ruinous and no longer required. Nearest the tower a length of wall-face survived 15 feet long and from 1 foot 8 inches to 2 feet 7 inches high. At its northern end a paved passage, averaging 2 feet 1 inch wide, with door-checks at its inner end, ran north-westwards for a length of

7 feet to open into the chamber. From its inner end the chamber wall ran northwards in a slight curve to a point 12 feet 8 inches distant, when it returned eastwards for 5 feet and became lost. Four slabs on edge of no great height projected at intervals from the wall-face. The two nearest the door were 6 feet 6 inches apart, and may have been the end stones of a box-bed. Two other low slabs on edge in the floor formed a right angle, inside which a quantity of peat-ash indicated that the slabs were probably kerbstones of a hearth, H7. Two hammer-stones of lighter type than those found in the tower were picked up from the floor, which was less than 2 feet below the surface. Other chambers had no doubt existed, but time did not permit of full and further excavation.

Relics.—No particularly outstanding relics were recovered, nor were any metal objects found. What there were consisted of deer-horn, many animal bones, broken pottery, and a number of typical broch implements and utensils of stone. Pounders and smoothing-tools predominated, and the others included dishes, knocking-stones, pivot-stones, anvils, tether stones, a saddle-quern, several rubbers, circular querns of post-Roman date, pot-lids, a pestle and a whorl.

Animal remains are described in a separate Report at the end of this article. A detailed list of the stone fabrications which, unless otherwise stated, are made of sandstone, is here appended.

Dishes.

Part of an ashet shaped by pecking, approximate length when complete 15", walls $1\frac{1}{2}$ " to 2" thick, finished with rounded rims or edges, depth of bowl 5".

Part of another with rough outer surface and bowl only shaped by pecking, bowl had been over 18" long and walls from 3" to 4" thick.

A dish, $9\frac{1}{2}$ " \times $8\frac{1}{2}$ " \times $4\frac{1}{2}$ " thick, rough on outside, and bowl, $6\frac{1}{2}$ " \times $5\frac{1}{4}$ " on axes and $1\frac{3}{4}$ " deep, shows pecking near brim but bottom smoothed by rubbing.

Knocking-stones.

A knocking-stone formed out of a boulder, approximately 17" \times 15" on top and 12" thick; bowl 10" \times 9" \times 7" deep with rounded rims and walls $3\frac{1}{2}$ " to 4" thick (fig. 5, A).

Part of another, similar, $12\frac{1}{2}$ " wide \times $9\frac{1}{4}$ " thick; bowl 8" wide \times 7" deep, walls $2\frac{1}{4}$ " thick (fig. 5, B).

Pivot-stone.

Roughly conical boulder with pivot-socket, $2\frac{3}{8}$ " diameter by $\frac{5}{8}$ " deep, in the wider end; length 14", girth at socket $21\frac{1}{2}$ ". Another, reused as part of the pavement in compartment No. 12.

Cupped Stone.

A stone, $10\frac{1}{2}" \times 9" \times 5\frac{1}{2}"$ thick, with a percussed cup, $2\frac{3}{4}"$ diameter by $\frac{7}{8}"$ deep, on one side similar to pecked-cupmarked stones found in other brochs. The purpose is unknown, but some authorities think the cup might have been formed through use as a small anvil.

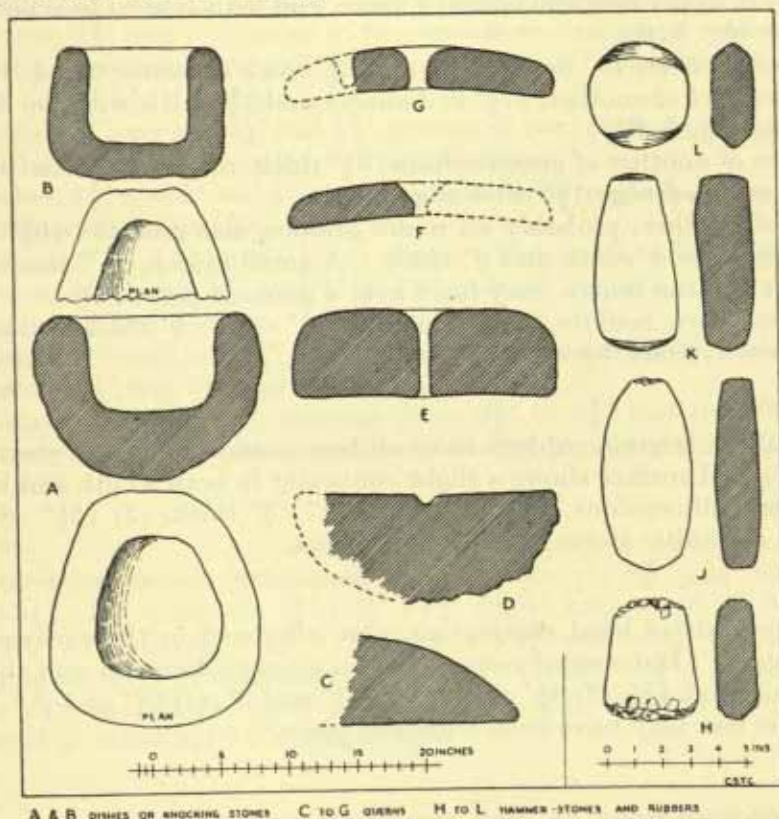


Fig. 5.

Anvils.

Boulder, $2' 9" \times 2' \times 8"$ thick, peck-marked on one side.

Another, $1' 4" \times 9" \times 5"$ thick, peck-marked on one side.

Tether-stones.

Slab tapering to a pointed end broken through a hole, $3"$ diameter in wider end, $1' 8"$ in broken length, $13"$ at wide end and $1\frac{1}{2}"$ thick.

Another, also tapering and similarly broken, $15"$ long by $13"$ wide and $1\frac{1}{4}"$ thick, hole $4"$ diameter.

Fragment $6"$ long, $2\frac{5}{8}"$ wide and $2\frac{7}{8}"$ thick, with rounded outer edge merging into remains of a biconical hole on the inside, made by pecking, and

of probable narrowest diameter $1\frac{1}{2}$ ". In appearance like part of a stone ring but more likely to have been part of a tether.

Querns.

Upper grinder of circular quern, 17" in diameter and 3" thick at centre, with convex upper face and concave lower, and with central hole and cavity for handle (fig. 5, G).

Part of another, 19" in diameter and $2\frac{3}{8}$ " thick at centre (fig. 5, F).

Greater part of another, $17\frac{3}{4}$ " in diameter and $6\frac{3}{8}$ " thick, with top flattened by pecking (fig. 5, E).

Portion of another of granitic stone, $6\frac{1}{2}$ " thick, reducing by convex upper side to a rounded edge $1\frac{1}{2}$ " thick (fig. 5, C).

Part of another, probably an under grinder, also granitic, $16\frac{1}{2}$ " \times 13" in broken length and width and 8" thick. A small cavity, $1\frac{1}{2}$ " diameter and $\frac{5}{8}$ " deep at its true centre, may have held a gnomon (fig. 5, D).

A water-worn boulder, approximately 16" \times 15" \times 5" thick, rubbed to a slightly concave face by use as a saddle-quern.

Grain-rubbers.

The following grain-rubbers have all been made from water-worn stones and the rubbed surface shows a slight convexity in both length and breadth. The greatest dimensions are: (1) $15\frac{1}{2}$ " \times $9\frac{1}{2}$ " \times 3" thick, (2) $12\frac{1}{2}$ " \times $8\frac{1}{2}$ " \times $4\frac{1}{2}$ " thick, (3) a granitic stone 15" \times $8\frac{1}{4}$ " \times $4\frac{1}{2}$ " thick.

Pot-lids.

Five pot-lids of local shaly stone were all found in the excavations in the courtyard. Dimensions respectively in average diameter and thickness are: (1) 13" and $1\frac{1}{4}$ ", (2) $6\frac{3}{8}$ " and $\frac{5}{8}$ ", (3) $5\frac{1}{8}$ " and 3", (4) $2\frac{3}{4}$ " and $\frac{3}{10}$ ", (5) $1\frac{5}{8}$ " and $\frac{1}{4}$ ", the last may have been a gaming piece.

Pestle.

A water-worn stone, $6\frac{1}{4}$ " long, tapering from an oval cross-section 3" and $1\frac{3}{8}$ " on the axes to a round section $1\frac{3}{4}$ " diameter. Both ends rubbed to a convex surface (fig. 5, K).

Smoothing Implement.

A stone, $6\frac{1}{4}$ " long between broken ends and $2\frac{5}{8}$ " and $1\frac{1}{2}$ " on axes of oval cross-section, found in the courtyard; fashioned all over to a smooth surface, and traces at one end of a high polish indicate very fine rubbing action and also suggest a narrowing axe-edge termination.

Grinding or Smoothing Implements.

Circular water-worn stone, 4" diameter and $2\frac{3}{8}$ " thick, highly polished and flattened on one side; edges on either side smoothed convexly all

round by rubbing; traces of later use as hammer-stone. Found beside a hearth and discoloured by heat. Presented to Wick Museum.

Another, $4\frac{5}{8}$ " and $2\frac{1}{8}$ ", similar in every respect except that the rubbed edges occur only on axes of the circumference diametrically opposite, and it was not put to later use. Presented to Wick Museum.

Another, $3\frac{5}{8}$ " and $1\frac{5}{8}$ ", similar to last but not polished on side (fig. 5, L).

Another, $3\frac{3}{8}$ " and 2", similar to the one above, but edges rubbed only on part of the circumference and hammered on part diametrically opposite. Presented to Wick Museum.

Another, 8" long and $3\frac{1}{4}$ " and $1\frac{3}{4}$ " on axes of oval cross-section, rubbed on edges of both ends. Presented to Wick Museum.

Another, $6\frac{3}{4}$ " and 3" and $\frac{1}{2}$ ", similar to above but rubbed on one end only. Presented to Wick Museum.

Another, 5" and $3\frac{1}{2}$ " and $1\frac{3}{8}$ ", as above. Presented to Wick Museum.

Another of quartz, $6\frac{1}{4}$ " and 4" and 3", rubbed on both edges at one end and hammered at the other.

Another of sandstone, $5\frac{3}{4}$ " and $3\frac{3}{4}$ " and $1\frac{1}{2}$ ". Presented to Wick Museum.

Another, $6\frac{7}{8}$ " and $3\frac{1}{4}$ " and $1\frac{5}{8}$ " (fig. 5, J).

Another, $5\frac{1}{2}$ " long, and tapering from $3\frac{1}{2}$ " to $2\frac{1}{8}$ " and from $1\frac{3}{4}$ " to $1\frac{1}{8}$ " respectively on axes of cross-sections, rubbed at narrow end and hammered at wide end.

Pounders.

Water-worn stones, hammered at one end: (1) $8\frac{3}{8}$ " \times $3\frac{7}{8}$ " \times $1\frac{7}{8}$ " thick, (2) 5" \times $3\frac{1}{4}$ " \times $1\frac{1}{8}$ " thick, (3) $5\frac{1}{4}$ " \times $3\frac{1}{4}$ " \times $1\frac{1}{4}$ " thick, hammered at both ends; (4) $6\frac{1}{2}$ " \times 5" \times $1\frac{3}{4}$ ", (5) $3\frac{7}{8}$ " \times $3\frac{7}{8}$ " \times $1\frac{5}{8}$ " thick, (6) $4\frac{1}{2}$ " \times $3\frac{3}{8}$ " \times $1\frac{1}{2}$ " thick, found in northmost chamber next rampart (fig. 5, H); (7) $3\frac{3}{5}$ " \times $2\frac{1}{2}$ " \times $\frac{7}{8}$ " thick, found likewise; (8) shaped flat-sided poulder, broken at one end 2" square and hammered at other $3\frac{5}{8}$ " \times 2"; length $3\frac{5}{8}$ ".

Whorl.

Whorl, $1\frac{1}{2}$ " diameter and $\frac{5}{8}$ " thick, with percussed biconical hole $\frac{3}{4}$ " diameter reducing to $\frac{3}{16}$ ".

Only one small nodule of flint and one small flake were found.

Pottery.—The pottery has been examined by Mr R. B. K. Stevenson. Not more than a score of vessels are represented, many by single sherds. He notes that some are characterised both by the lumpiness of their surface and by their hardness. Such is the rim, fig. 6, *a*, which resembles in rim diameter and fabric a vessel from the White Broch, Caithness, which stands over 16 inches high and is the same in diameter. There is a close resemblance also to sherds from the lower levels at Traprain Law, some of which, like the White Broch vessel, have finger-tip decoration in the hollow outside

the rim. The Kilmster rim with several sherds of the same fabric, and the thinner rim, fig. 6, *b*, came from the slab of the latest hearth in the centre of the broch. Again similar are sherds forming most of the lower part of the walls of a vessel of hard grey fabric with a buff surface, which had been about 14 inches in diameter at the base, clearly comparable with the remains of a vessel from Barrock Broch. They were found in radial cell 4, while sherds, possibly of the same vessel, lay in the sunk pit at the centre of the broch covered by a later pavement and hearth. Fig. 6, *c*, came from the broch floor.

The rim shown in fig. 6, *e*, bears two incised lines that might be intentional decoration. It has a smooth, buff outer surface, and was found low down on the broch floor, as was a sherd of vivid red soft fabric. In the entrance

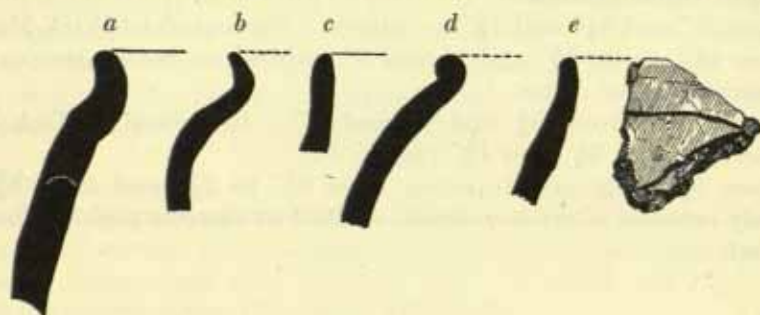


Fig. 6. Rim fragments of pottery.

passage were several sherds, including a flattened rim, without large grits or lumpy application of clay finish; this is the fabric which seems to have entirely superseded in course of time the "cinerary urn tradition." Fig. 6, *d*, whose shape is paralleled in a number of brochs and to some degree at Traprain, is a brick-red soft micaceous ware.

The following relics from Sir Francis Tress Barry's excavations are deposited in the National Museum, viz.: Bone needle, HD 431; Bone, HD 432; Pot, GA 908.

In conclusion I desire to acknowledge my indebtedness to the Ministry of Works for permission to publish this account, to Dr James S. Richardson, Inspector of Ancient Monuments for Scotland, for making the necessary arrangements for me to carry out the work, to Mr R. B. K. Stevenson, M.A., Keeper of the National Museum, and to Miss Margery I. Platt, M.Sc., of the Anatomy Department of the Royal Scottish Museum, for their Reports on the Pottery and Animal Bones respectively. I have also to express my grateful thanks to Mr Murdo M. Mackenzie, Schoolmaster, Kilmster, for his kindly interest and help during the operations.

REPORT ON THE ANIMAL REMAINS.

By MARGERY I. PLATT, M.Sc., Royal Scottish Museum, Edinburgh.

From Interior of Broch.

Red Deer.—Left angle of lower jaw. The head of a femur was found in the space between the earlier and later pavements.

Pig.—Tusk (canine) from lower jaw.

Fox.—Many bones of a young individual of this species occurred here: femurs, tibia, pelvic fragments, and lumbar vertebræ. (Like the rabbit, the fox is a burrowing animal, and these remains may have been intruded at a later date than the others. They cannot therefore be of great prehistoric significance.)

Ox.—A horn core, head of a rib, and phalanx of a young animal were present.

A "pin-point" found in the broch is a bone of fine lenticular structure, and is reminiscent of implements carved from the bone of a whale. It is impossible to state which species.

From Pit under Central Hearth.

These consisted for the most part solely of sheep, many young, and all of a slender horned variety.

One rib of the ox occurred.

From Entrance Passage.

Sheep.—The remains here comprised many bones of the average-sized sheep, which species was the most abundant. These were indicated by vertebræ, teeth, long bones, ribs, and phalanx bones, and by fragments of scapula (one calcined).

Ox.—An ox of small size was represented by cannons, ribs, vertebræ, distal part of a tibia and fragment of pelvis.

Shells.—Many shells common on a rocky beach, e.g. *Littorina littorea* and *Patella vulgata*, were present, and probably supplemented the diet of the broch people.

From Late Chamber to N.W. of Tower.

Ox.—Bones of young animals were indicated, chiefly by teeth and long bones.

Sheep.—Part of a skull, teeth, and cannons of an average-sized sheep were present here.

Red Deer.—Represented by split cannon bones and fragments of vertebrae.

From Late Chamber on S.S.E. of Tower

Pig.—There are two fragments of skulls from different animals, one young, the other showing the left upper dentition of an adult. A tusk found in the chamber on the S.E. side against the outer wall is a lower canine tooth of a pig, not very large in size, with the worn biting surface extensive and denoting quite a mature animal.

Ox.—Judging from the cannon bone fragment and the worked rib, an ox of small-sized breed is indicated.

Sheep.—A small calcined bone is probably that of a sheep.

Fish.—One fragment—too small for identification.

From Area of Radial Chamber outside the Entrance.

Red Deer (Cervus elaphus scoticus, Lönnberg).—This is represented by antlers of large size, fragmentary, not complete, the largest piece being the proximal end from which the brow tine has been sawn off. Many small tines occur, one extensively worked by man, hollowed out at the base with the point abraded and polished.

Shells from Constructions in Courtyard.

Two shells commonly found on the shore within the tidal zone were present in large numbers, namely, *Littorina littorea* and *Purpura lapillus*. The fragment of a much larger shell—*Cyprina islandica*—found here is from shallow water round the coasts of the North Sea. It is often thrown up by the tides on the beach, and due to its large size and hollow valves may have been used to hold water or oil.

Outer Wall Trench.

The axis vertebra of an ox of very small race was represented here.

Bones throughout Debris.

This was a mixed assembly of human bones, those of domestic stocks, wild species including Red Deer and various birds, used for food and other purposes; together with numerous shells of edible shellfish, and lastly bones of burrowing animals, probably intruded at a later date (mole and rabbit).

Human.—Many fragments of the human species occur from both sides of the body, though the majority are from the left side. There is nothing

approaching a complete bone. They comprise two parts of left radius; proximal articulation and a separate distal fragment of the left ulna; 3rd digit of manus of the left side and end of 4th metacarpal; metatarsals of the 2nd and 4th digit, left side, the former fairly complete, the latter distal end missing; the cuboid of the right pes; the proximal portion with the capitulum separate of the right femur. All these remains indicate an individual of rather small stature.

Sheep.—Fragments of all parts of the skeletons of this species are numerous. Young and adults are present, and the latter have particularly long, slender cannon bones, indicating animals of deer-like proportions.

Among these remains is a slender metatarsal which has been worked for some reason. On both anterior and posterior surfaces a groove about $\frac{1}{16}$ inch wide has been made along its length.

Ox.—Fragments of the skull, long bones, and almost every other part of the skeleton of an ox of small yet adult size are represented.

Pig.—Remains are sparser than the other domestic breeds, but skull fragments and teeth show that both young and adult pigs are present.

Red Deer.—Relics of this species also are not numerous. Tines, teeth, fragments of cannons, and a carpal (unciform) can be identified.

Birds.—These include wing bones of Common Fowl and also of a Capercaillie (*Tetrao u. urogallus* L.)—one humerus of each, the tarsometatarsus of a Raven (*Corvus c. corax* L.) and the carpometacarpus of a Gannet (*Sula bassana* L.). Bones which are possibly intrusive at a later date include humerus of Mole (*Talpa europæa* L.), and the right lower jaw of a Rabbit (*Oryctolagus cuniculus* L.).

Shells.—Many shells of edible shore varieties were present, e.g. *Cardium edule*, *Patella vulgata*, and *Purpura lapillus*.

One fish-bone occurred, probably that of a Cod, *Gadus callarias* L.

VII.

THE CHURCH BELLS OF RENFREWSHIRE AND DUNBARTON-SHIRE. By R. W. M. CLOUSTON, B.Sc.Eng., F.S.A.Scot.

Up to the present time very little has been published relating to church and other bells in Scotland. Only two counties have been covered in detail, namely, Kincardineshire in 1897 and Linlithgowshire in 1913, both being the work of Dr F. C. Eeles, F.S.A.Scot.

During a two years' residence in Renfrewshire the author of this paper discovered that, unlike England where most of the exploratory work has already been done, Scotland presented a large field for investigation, and so started on this survey.

When Christianity first came to these shores the only bells used were those that could be carried by hand by the missionaries, and of this type we have the Skellat bell preserved in Dumbarton. After a number of years stone churches or chapels were built, having either an open bell-cote or a tower. The bells were then a fixture in the church and were not of any great size, each church usually having a single bell. In Scotland right up to the Reformation we find that only the richest churches had more than one bell, and in these cases the bells were seldom tuned one with another. In England, however, rings of bells were known in the twelfth century; there was one of seven bells at Croyland in the early years of that century. These bells were definitely tuned one with another and were rung successively. Normally, however, the English parish church at the time of the Reformation had up to five bells, but in the early part of the seventeenth century there was introduced a system of scientific change ringing, and as the total number of changes possible on five bells, being factorial 5, is only 120, it was soon in vogue to increase the number of bells up to six and even up to an octave. For change ringing the bells are hung in a special type of frame, with wheels, stays and sliders, by which they can be swung a complete circle and made to rest mouth upwards when necessary.

Instead of following the English method of ringing, Scotland was influenced by the continental system. In the latter large numbers of bells, 23 or more, are hung stationary or "dead," and are hit with hammers manipulated by wires from a keyboard. These collections of bells are termed carillons when their number exceeds 22, and cover a range of two octaves or more. Any number less constitutes a chime. Unlike the English system where each bell requires a ringer, one man can operate a carillon

in much the same way as an organ, and sometimes it is purely automatic, being geared from the clock; the hammers being tripped by pegs fixed in the circumference of a barrel, which is rotated. However, this system produces bad results if the pegs wear or get distorted in any way, thus losing the beat of the music. Hammered bells have an inferior tone to those swung in a complete circle. In the latter case the result is louder, due to the fact that the bell is struck by its clapper or tongue when it is horizontal or almost upside down and the sound is then projected upwards and outwards.

The English system of change ringing is by no means unknown in Scotland, but it has been introduced only in modern times. There are rings of bells at St Cuthbert's and St Mary's Cathedral, Edinburgh; St James's, Leith; and in Alloa, Dundee, Glasgow, Paisley, Inveraray and Inverness. An early ring of bells as in the steeple of St Andrew's, Edinburgh, cast by the Whitechapel Foundry, London, in 1788. The tower is unsafe when the bells are swung, so they are clocked and chimed.

In preparing this paper the author's thanks are due to Dr F. C. Eeles, F.S.A.Scot., for his help and encouragement; to Mr Frederick Sharpe of Launton, Oxon., and Mr A. D. Lacaille, F.S.A., F.S.A.Scot., of London, for the loan of a block and a photograph. The bellfounding firms of Messrs John Taylor & Co., of Loughborough; Messrs Gillett & Johnston, Ltd., of Croydon; and Messrs Mears & Stainbank, of Whitechapel, London, have very kindly furnished the weights and notes of the bells they have supplied to these two counties. Mr A. A. Hughes, J.P., Manager of the last-named firm, has also been of great assistance. Mr James D. Boyd, F.S.A.Scot., Curator of the People's Palace Museum, Glasgow, very kindly gave permission for the two old bells under his charge to be photographed (Pls. XXXV, 1, and XXXVI).

THE CHURCH BELLS OF RENFREWSHIRE.

Renfrewshire, though one of the smaller counties of Scotland from the point of view of area, has a high density of population and consequently a large number of churches, the majority of which are modern. At the Reformation it consisted of sixteen parishes with parts of two others; a number of these parishes have since been divided to allow for the formation of such towns as Port-Glasgow and Gourock.

In the county there are no pre-Reformation bells actually in use, the only one remaining from that period being the very small handbell that was found some years ago under the floor of Renfrew Parish Church.

This survey of the church bells and others in the county covers the bells in all the older parish churches and all bells in municipal possession. In addition, where a modern church possesses a chime or a ring of bells or a single bell of any magnitude, these have been included.

The older bells may be classified thus:

(I.) 1 mediæval	Unknown founder.
(II.) 4 seventeenth century	$\left\{ \begin{array}{l} 2 \text{ Scottish.} \\ 1 \text{ English.} \\ 1 \text{ Dutch.} \end{array} \right.$
(III.) 5 eighteenth century	$\left\{ \begin{array}{l} 2 \text{ Scottish.} \\ 2 \text{ English.} \\ 1 \text{ Dutch.} \end{array} \right.$

Two of the seventeenth-century bells have been recast, but in both cases the old inscriptions have been reproduced. The earlier one of these used to hang in the church at Kilellan before the latter was abandoned, and was cast by Charles Hog in 1618.

It is probable that this founder was the son of George Hog who cast the bell at Closeburn, Dumfriesshire, which is inscribed: ¹

+TREGINTA +DE +AGVST +APVD · POTERRAW/
ANNO +DOMINI +1606

On the waist is a medallion similar to that found on the Kilellan bell (fig. 3), but with the initials G.H. The word Poterraw would seem to be referring to the place of that name in Edinburgh, which was the probable site of his foundry. The hammer and the crown on the medallion refer to their membership of the Incorporation of Hammermen of Edinburgh.

Another bell by Charles Hog is to be found in the mansion of Burnhouse, Midlothian, inscribed: ²

MICHEAL.BIL.EVIR.MOIR.1613./ONLY.TO.GOD.BI.
HONOV.RAND.GLOIR.RING.KIRK.³

Below are the initials CH in the medallion as illustrated.

The Paisley Silver Bells are next in point of age. The two bells are made of pure silver, and are in the form of a cone with the base closed by a perforated hemisphere. Inside each there is a ball which when disturbed causes the bells to tinkle. They were made as the prize for the Paisley Races which were instituted in 1620. The larger bell bears the old Burgh Arms with the initials O.P., and the other is dated 1620, with a coat of arms and initials H.C., which probably stand for Hew Crawford of Cloberhill, who won them first.

¹ *Report of Royal Commission on Ancient and Historical Monuments, Dumfriesshire*, p. 175.

² *Ibid.*, West and Midlothian, p. 175.

³ [This must surely have been originally intended to read: 'Only to God bi' honour and gloir. Ring Kirkmicheal bil evirmoir. 1613'—Ed.]

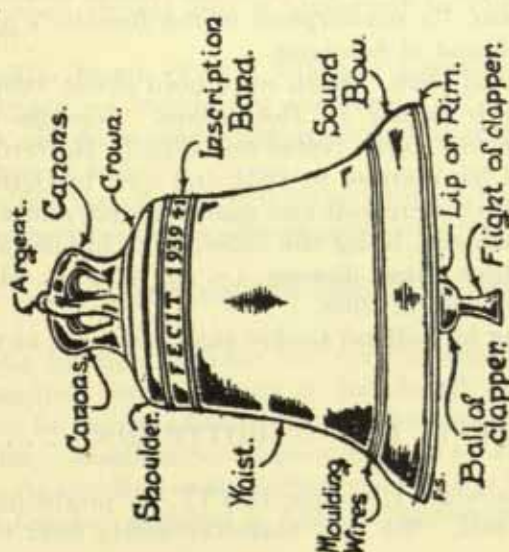
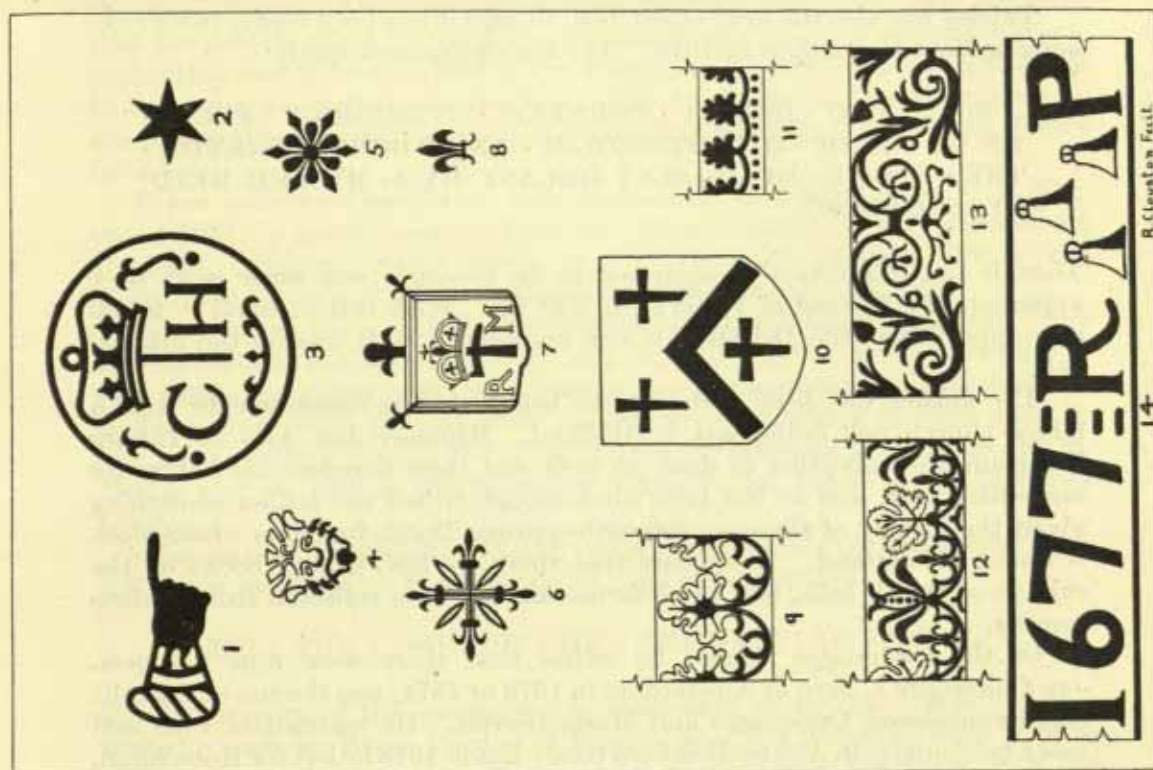


Fig. 1A. Sketch of bell showing names of parts.

[By courtesy of Mr F. Sharpe of Laundon, Oxon.]

Figs. 1-14. Half-scale details of founders' marks.

[Nos. 1, 2, 3, Charles Hog of Edinburgh, 1618; 4, 12, 13, Gerard Koster of Amsterdam, 1663; 5, Messrs John Taylor & Co., Ltd., of Loughborough, Leics., 1909; 6, 8, Van Jacob Waghevens of Mechlin, Belgium, 1554; 7, Robert Maxwell of Edinburgh, 1723; 9, Cornelis Ouderogge of Rotterdam, 1657; 10, arms of William Kennedy, abbot of Crossraguel, c. 1527; 11, Jan Burgerhuya of Middelburg, Holland, 1610; 14, (prob.), Roger Purdew of Bristol, 1677.]

Paisley has also the next oldest bell, though it has been recast twice since coming from Rotterdam in 1648. The inscription now reads:

SOLI · DEO · GLORIA · CORNELIS · OVDEROGGE · FEGIT ·
EN · D · I · OI · O · ROTTERDAM · ANNO DOMINI 1648/FOR ·
THE · TOWNE · OF · PASLAY/RECAST BY/J. MILLER REID/
GLASGOW/1897.

Though the inscription is supposed to be facsimile one error is at once apparent, the writing of FEGIT for FECIT. With this in mind it would also appear that the D-I-OI-O is not reproduced as it was on the original bell.

The author has been fortunate in being able to communicate with a fellow church bell enthusiast in Holland. Mijnheer Jan Arts of Tilburg has made the collection of data on bells and their founders his hobby for some time past, and he has been kind enough to tell the author something about the history of these seventeenth-century Dutch founders whose work is found in Scotland. It appears that there are few, if any, books on the subject of Dutch bells, and the information has been collected from various sources.

Of the Ouderogge family, he writes that there were four founders. Jan Ouderogge I, born in Amsterdam in 1573 or 1574, was the son of Cornelis Jan Symonszoon Ouderogge and Maria Gerrits. He married in 1598 and was a bellfounder in Amsterdam for a time; but in 1613 he left for Rotterdam, where he started a gun foundry. He died 29th August 1625, and was buried in the Grote-Kerk in Rotterdam. In 1622 he cast the metal statue of Erasmus for the city of Rotterdam, "a masterpiece of the founder's art." So far none of his work has been found in Scotland.

Jan I had two sons, Cornelis and Dirk. Both were born about 1600 in Amsterdam and moved with their father to Rotterdam. Cornelis was married on 27th July 1631 to Cornelia Dirks Nobel and died in Rotterdam in the beginning of July 1672. Dirk married in 1631 and died in October 1649. Cornelis and his brother Dirk were bell and gun founders and they worked in partnership, though Cornelis, being the elder, gave his name to the firm. Cornelis had also another name, Iansen, *i.e.* son of Jan, which he uses on a bell at Culross Abbey cast in 1659.

On many of the bells remaining in Holland to-day that were cast at this foundry the inscription reads:

CORNELIS OVDEROGGE FECIT D · I · O · ROTTERDAM . . .

Another bell of this type had the word EN after FECIT, so producing a great similarity with the Paisley bell. We may therefore safely infer that

the two letters ".OI." are superfluous on this bell. Jan Arts suggests that the initials stand for Dirk Jansen Ouderogge, showing that he and not his brother cast the bell. This bell at Paisley is the only one bearing Cornelis Ouderogge's name that also has the initials on it, but to test the theory in the future there should be no bells dated after October 1649 bearing Dirk's initials.

Other bells by Cornelis or Dirk Ouderogge in Scotland are at Forfar, dated 1637; a possible one at Ruthven, Aberdeenshire, 1643; Hutchison's Hospital, Glasgow, 1649; Navar, now in Arbroath Museum, 1655; the Holy Rude Church, Stirling, 1657; and Culross Abbey, Fife, 1659.

Cornelis had a son Jan II who was the last of this line of founders. His date of birth is not known, but he was married in 1679 at Rotterdam and was active as a gun and bell founder at 's Gravenhage. His bells in Holland range from 1681 to 1709, though he was working in 1676 when he cast a magnificent cannon for King Charles II weighing 9 cwt. 1 qr. 16 lb. This is now on view in the basement of the White Tower in the Tower of London.

The earliest English bell in the county now comes to our notice; this bell hangs in the West Kirk, Greenock, and is inscribed:

≡ FOR : THE : CHURCH ≡ OF ≡ GRINOCK : 1677 ≡ R Δ Δ P

The latter part of the inscription is illustrated in fig. 14. This bell was probably cast by Roger Purdue of Bristol, who was founding from 1644 to 1688. Greenock being a port was in an easy position for trade with the west of England, so it is not surprising that the bells came from so far afield. Another Bristol bell is preserved in Paisley Museum and bears the date 1767.

The Burgh of Port Glasgow possesses a small brass handbell on which is typed an inscription and date 1707. The Town Crier used this bell in the old days, and judging from the tone it is as well that the bell is no longer in use.

The last Dutch bell to be noticed hangs in a turret in Paisley Abbey; the inscription has almost corroded away, but it is reputed to be:

JOHANNES SPECHT ROTTERDAM A.D. 1730

Bells by this founder are rare in Scotland, as at this time the Scottish foundries were working in Edinburgh and elsewhere. M. Jan Arts states that he knows of ten bells cast by this founder between the years 1749 and 1768. Another Scottish example is at Portsoy, Banff, dated 1746.

At the close of the eighteenth century the great Whitechapel Bell Foundry in London supplied a bell to Eaglesham. This firm was started in 1567

and has been founding bells continuously to the present day, having cast many of the important bells in England and the Empire. Bells from this foundry are found at Eaglesham, 1792; Kilbarchan, 1811; Neilston, about 1830; Neilston Old Church, 1863; Paisley Steeple, 1863; and the largest bell in the county, that in Renfrew Parish Church, weighing just over 22½ cwt.

There were bells from this foundry at Greenock, Mid Kirk, 1787; Paisley, High Kirk, 1823; Johnston, 1847; and Lochwinnoch, 1849, but these have since been recast.

The other two leading bell-founding firms in England have done some notable work in the county. Messrs John Taylor & Co., of Loughborough, Leicestershire, cast and hung the octave in St James's Church, Paisley, each bell being arranged to swing in a complete circle. Messrs Gillett & Johnston, Ltd., of Croydon, Surrey, cast the chimes of bells at Greenock, St George; Paisley Town Hall; and the Orphan Homes of Scotland in Kilmacolm parish, consisting of 9, 10 and 12 bells respectively, with tenors of 16½, 19½ and 11 cwt.

Two Scottish firms have provided quite a number of bells in the county. One firm was started by David Burges of Glasgow, who was made a member ¹ of the Incorporation of Hammermen of Glasgow on 11th June 1833, and founded till 1854, when he retired. During this time he cast a bell for Rossland Church, Bishopton, in 1844, and also recast the Kilellan bell in the same year. He was succeeded by John C. Wilson in 1854, and the firm was made into a limited company, which cast bells till 1928. The site of the foundry was first at 34 Shuttle Street, Glasgow, but it soon moved to 99 Portugal Street, Glasgow, and it became known as the Gorbals Bell Foundry. The goodwill and plant of this firm have since been acquired by Messrs Steven & Struthers of Glasgow.

Through the kindness of the daughter of the last owner of the foundry, Mrs Sykes-Wright, the author has been able to see a catalogue of bells cast at this foundry up till the early years of this century. This catalogue, unfortunately, gives neither the dates nor the weights of the bells, and as some of the foundry records have disappeared, it is hard to obtain an accurate figure for the weights and the dates of such bells as are inaccessible. One guide in fixing the date of bells in turrets, where the actual date is not visible, is by the styling of the firm. John C. Wilson alone is found from 1854 till about 1873. From then till about 1895 the firm was called John C. Wilson & Co., and from then till 1928 it was a limited company.

There are a large number of bells from this foundry in the county, most of them single bells, but in the private chapel of the Right Honourable Lord Inverclyde, at Wemyss Bay, there is a chime of eight bells cast in 1878. Other chimes by John C. Wilson are at Lamplash (9), Coatbridge Wesleyan Chapel (6), and in the Glasgow Tolbooth there are 16 bells all cast in 1881.

¹ *Incorporation of Hammermen of Glasgow*, H. Lumsden and P. H. Aitken, p. 314.



[Photo: J. W. B. Henderson.

2. Disused bell at Roseneath, Dunbartonshire, cast by Jan Burgerhuysof Middelburg, Holland, in 1610.



[Photo: A. D. Lucille, P.S.A. Scot.

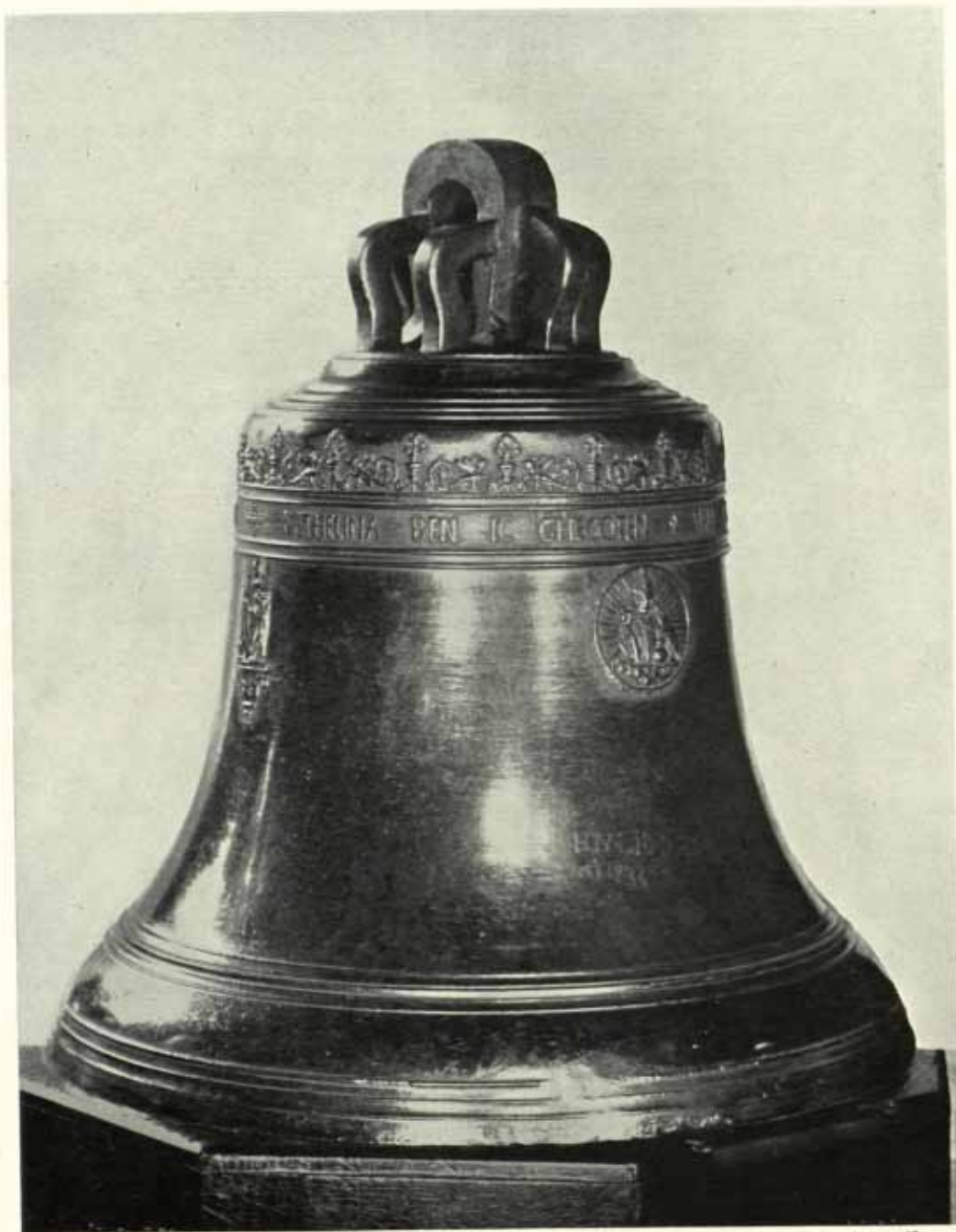
1. The Skellat Bell, Dumbarton.



[Photo: The Author.
2. Disused bell at Bonhill, Dumbartonshire, probably cast by Robert Maxwell of Edinburgh in 1712.



[Photo: *Amstel, Glasgow.*
1. Disused bell in People's Palace Museum, Glasgow, cast by Gerard Koster of Amsterdam in 1603.



[Photo: Annan, Glasgow.

Bell in People's Palace Museum, Glasgow, cast by Van Jacop Waghevens of Mechlin, Belgium, in 1554. Fine example of ornamentation.

R. W. M. CLOUSTON.

The other local foundry was at Greenock, and it was known as Messrs James Duff & Sons. Their first bell in the county is in the old church at Port-Glasgow, dated 1839. Most of the bells in Greenock and Port-Glasgow were cast or recast by this firm; the tone of these bells is not particularly good judged by modern standards, and the bell of 1839 is very reminiscent of the shape of bells cast in England in the early thirteenth century—just like a flower-pot.

A LIST OF THE BELLS ARRANGED ACCORDING TO PARISHES.

In this list the parishes are arranged in alphabetical order. Unless otherwise stated the inscriptions commence on the band below the angle of the shoulder, and the end of each line is denoted by an oblique stroke.

The diameters of all the accessible bells have been measured, and from them an approximate idea of the weights has been computed. In certain cases the exact weight is known, and when a list contains both actual and approximate weights, the latter are marked thus: ‡.

1. BRIDGE OF WEIR. St Machar.

A chime of three bells; tenor about 12 inches diameter. All inscribed:

JOHN C. WILSON & CO FOUNDERS GLASGOW . . .

These bells are hung stationary or dead in a gable turret in two tiers, the tenor being above: They are sounded by being struck by external hammers.

The turret is only accessible with very great difficulty and the above inscription was found by using a telescope. The remaining part of the lettering, being presumably the date, is obscured by the masonry. One of the bells is supposed to be slightly cracked, but as the chiming mechanism was not in order at the time, this could not be verified.

The bells were cast at the Gorbals Bell Foundry, Glasgow, and as the firm is styled John C. Wilson & Co. they were made between the years 1873 and 1898.

2. CASTLE SEMPLE. Collegiate Church.

Of this church only the walls remain, consisting of a chancel, nave and a western tower. It was founded in 1504 by John, Lord Semple, and it is recorded¹ that at that time the duties of the Sacristan were to take charge of the church, the ornaments, the vestments, to regulate the clock, and to

¹ *Archæological Collections of Renfrewshire*, vol. i. p. 60

ring the bells at Mattins, Evensong, Compline, at Sunday mass, at Curfew and for prayers. On Fast days, as the custom was, he was to double the ringing.

The church was in use at least up till 1612, and though from the foregoing it would have appeared to have had more than one bell, there is no trace of them or of the bell frame.

In a turret above a cart lodge in the stables nearby there hangs a bell, $16\frac{1}{2}$ inches diameter, inscribed:

C.H. —:— W^m MACDOWALL ESQ: —:— 1762 —:—

This bell has loop canons of the old type, and the inscription was scratched on the mould and not stamped. It is therefore probably a local product.

William Macdowall, Esq., bought the estate from Hew Lord Sempill in 1727, and was Member of Parliament for the Glasgow District of Burghs and later Member for the county of Renfrewshire.

3. CATHCART. St Oswald.

In recent years a new church has been erected near the site of the previous one, which dated from 1831. The western tower of the older building alone remains, and contains one bell, 28 inches diameter, which is clearly the product of a brass foundry as a full-sized pattern was used in its casting.

The bell is devoid of any inscription, has no moulding wires below the shoulder, and has been cast with a handbell type argent in lieu of canons: it probably dates from the rebuilding of the church in 1831.

4. EAGLESHAM. Old Church.

In a tower with spire, built in 1788, there hangs one bell, $20\frac{1}{8}$ inches diameter, inscribed:

THE GIFT OF THE R^t HON^{ble} EARL OF EGLINTOUNE TO THE/
PARISH OF EAGLESHAM. T. MEARS OF LONDON FECIT 1792

The bell has the usual Whitechapel Foundry canons of that period, and is fitted with a wooden headstock and a very rough wooden wheel of local manufacture.

The rope is very thick and weighty, and to ensure that the bell is vertical for the clock hammer, a quantity of lead sheeting is nailed to the wheel to form a counterbalance.

Lord Eglinton, a heritor of the church, was responsible for the admirable street planning in this village.

5. EASTWOOD. Old Church.

A western tower with spire containing one bell, 45 inches diameter, weighing about $14\frac{1}{2}$ cwt. It is inscribed:

JOHN C. WILSON FOUNDER GLASGOW N^o 779/PRE-
SENTED TO EASTWOOD CHURCH BY WALTER CRUM OF
THORNLIEBANK. A.D. 1863.

This bell was cast at the Gorbals Foundry, Glasgow, and is hung for ringing inverted. The fittings are of wood, with a large counterbalance weight bolted to the headstock.

6. ERSKINE. Old Church.

Outside on the roof of the western tower hangs one bell, 28 inches diameter, inscribed:

CAIRD & C^o MAKERS GREENOCK 1825./
4-1-11

This bell is hung in a wooden frame with a small roof over it, and is fitted with a metal quarter wheel and metal headstock; to the latter is attached a counterbalance weight.

The figures on the inscription are incised, and record the bell's weight as 4 cwt. 1 qr. 11 lb. On the soundbow there is an ornamental border.

The firm of Caird & Co. started their foundry in Greenock in 1809; by 1826 they were making machinery, and in 1844 the firm started in the shipbuilding business which has made their name famous. The shipbuilding yards are now managed by Messrs Harland & Wolff.

The present church was built in 1813, the bell from the older church being retained, but in October 1824 it is recorded¹ in the Kirk Session minutes that Dr Stewart, the minister, reported that the bell was now "cracked and useless," and a committee was appointed to "get a new bell or to have the old one recast." Two years later the new bell was installed, costing £36 less £3 for the old bell, from which it may be inferred that the old bell must have weighed much less than a hundredweight.

7. GOUROCK. Old Church.

A single bell, 40 inches diameter, weighing about 11 cwt.

JOHN C. WILSON & C^o, LTD FOUNDERS. GLASGOW./IN LOVING
MEMORY OF DAVID WALKER. ELDER IN THIS CHURCH/WHO
DIED 12TH FEBRUARY 1910. AGED 65 YEARS./PRESENTED
BY HIS WIDOW 1911./"I JOY'D WHEN TO THE HOUSE OF
GOD GO UP THEY SAID TO ME"

¹ *Ye Anciente Kirke of Eriskine*, by D. N. Stewart, p. 60.

The bell hangs in a wooden frame with metal headstock and wheel. A counterbalance weight is provided. The bearings are unusual, being of the dry type. The gudgeon pins in the headstock each rest on two rollers, the latter being about 5 inches diameter and are held at a centre distance of about 3 inches one beside the other. As the gudgeon pins rotate, the rollers also turn about their own axes. This type of bearing is suitable for exposed positions, but has a bad failing in that the rollers get jammed and the gudgeon pin then scrapes on a dry metal surface, making the bell hard to swing and leading to excessive wear of the pin.

8. GOUROCK. St John.

A chime of two bells; treble 34 inches diameter, tenor 42 $\frac{1}{4}$ inches diameter.

		<i>Weight.</i>		
		<i>Cwt.</i>	<i>Qrs.</i>	<i>Lb.</i>
Treble.	THE GIFT OF MISS LONGLANDS/ AS A MEMORIAL OF HER BROTHER/ THOMAS LONGLANDS OF GOUROCK CASTLE/JOHN C. WILSON & C ^o . FOUNDERS. GLASGOW. A.D. 1877.	7	0	0 $\frac{1}{4}$
Tenor.	CLOCK AND BELLS ERECTED A.D. 1877/REV: ARCH: RUSSELL, M.A. MINISTER./JOHN C. WILSON & C ^o . FOUNDERS. GLASGOW./ VOCO, "VENITE IN DOMINI TEMPLUM."	12	0	0 $\frac{1}{4}$

On the treble the whole of the inscription except the foundry data is incised. The bells are hung in the open, underneath an Imperial Crown. The treble is hung dead but the tenor is hung in bearings.

9. GOVAN. Elder Park Church.

In a tower with spire there hangs one bell of about 20 inches diameter. The bell is devoid of inscription, has no moulding wires below the shoulder, and has been cast with a handbell type argent instead of canons. The bell is the product of a brass foundry, and was probably cast in 1826 when the church was originally built.

This church originally stood near Govan Cross and was the old Parish Kirk of Govan. In 1826 it was felt that the old building should be pulled down and a new one built; it was then decided that the new building should be faithfully modelled on the lines of the parish church at Stratford-on-Avon.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 157

In 1884, when there was a need for a larger church at the Cross, this building of 1826 was removed stone by stone and rebuilt on its present site some quarter mile away.

10. GREENOCK. West Kirk.

A chime of two bells; tenor 48 inches diameter, treble $17\frac{3}{4}$ inches diameter.

Treble. \equiv **FOR : THE : CHURCH** \equiv **OF** \equiv **GRINOCK : 1677** \equiv **R** Δ Δ **P**

Tenor. JAMES DUFF & SONS./MAKERS./GREENOCK./1873

The treble is cast with canons and is hung dead from a beam in the louvre windows. The bell ¹ was probably cast by Roger Purdue of Bristol, who was founding from 1644 to 1688. This founder was the second with this name, and usually worked in partnership with a relative William Purdue. At one time they temporarily migrated to Salisbury, but it is probable that this bell was cast in Bristol and sent up by boat to Greenock. Part of the inscription is shown in fig. 14, the lettering is plain, without any ornamentation above or below it.

The tenor is hung for chiming with metal fittings and a counterbalance weight. It is much worn internally, and as it has been already quarter turned, eighth turning will soon be necessary.

The clock was presented in 1856, and the quarters are struck on both bells and the hour on the tenor only, with no preliminary chime. The quarter chimes are most peculiar, due to the great difference in note between the two bells. At a distance the treble is inaudible.

The original West Kirk ² stood near Princes Pier and was founded in 1571. Its first bell is supposed to have come from Holland, but in 1675 this bell was cracked and the present treble was cast. The bell of 1677 hung in the Old West Kirk till 1856, when it was moved to its present position in the new church. The bell was familiarly known as "Tam o' Lang" from its sound.

A predecessor of the tenor was cracked in 1856 and it was recast by Messrs James Duff & Sons of Greenock, but from the date of the present tenor it would appear that the bell was again recast.

11. GREENOCK. Middle Kirk.

In a tower with spire hangs a single bell, 39 inches diameter.

JAMES DUFF & SONS/MAKERS/GREENOCK/1891

¹ Smith's *History of Greenock*, p. 364.

² *The Story of the Old West Kirk*, N. Hill, p. 34.

This bell is hung for chiming in a wooden frame with metal fittings, and has a poor tone. In 1786, when a steeple¹ and clock were erected at the Mid Kirk, the Town Council put in a bell, cast at the Whitechapel Bellfoundry, London, that was said to be equalled in sweetness of tone in the West Country by that only of the Gorbals, Glasgow. Unfortunately its successor does not live up to the old bell's reputation. The Whitechapel bell bore the inscription:

YE RINGERS WHO WOULD HAPPY BE, IN CONCORD LIVE
AND UNITY/W & T MEARS (LATE LESTER, PACK & CHAPMAN),
LONDON, FECIT 1787.

12. GREENOCK. St George.

A lofty tower containing a chime of nine bells, tenor 44 inches diameter, which are inscribed:

<i>Bell.</i>	<i>Inscription.</i>	<i>Approx. Weight.</i>		
		<i>Cwt.</i>	<i>Qrs.</i>	<i>Lb.</i>
Treble.	RECAST BY GILLETT & JOHNSTON CROYDON 1913./FOUNDED 1889	3	2	0
Second.	CAST BY GILLETT & JOHNSTON CROYDON 1912.	3	3	0
Third.	[<i>As on Treble.</i>]	4	2	0
Fourth.	[<i>As on Treble.</i>]	4	3	0
Fifth.	[<i>As on Treble.</i>]	5	3	0
Sixth.	RECAST BY GILLETT & JOHNSTON CROYDON 1912. CAST 1889.	7	0	0
Seventh.	[<i>As on Treble.</i>]	8	2	0
Eighth.	RECAST BY GILLETT & JOHNSTON CROYDON 1913./THIS PEAL OF BELLS WAS PRESENTED BY/M ^{RS} ROBERT SHANKLAND/TO THE FREE MIDDLE CHURCH GREENOCK./IN MEMORY OF HER PARENTS/M ^R AND M ^{RS} GIBSON, PAISLEY./1889.	11	2	0
Tenor.	CAST BY GILLETT & JOHNSTON CROYDON 1912./MIDDLE UNITED FREE CHURCH/GREENOCK/THIS TENOR BELL WITH TWO TREBLES/ ADDED BY THE CONGREGATION IN/ 1912.	16	2	0

¹ Williamson's *History of Greenock*, p. 131.

Directly below the inscription band there is a border on all the bells and, in addition to the above inscriptions, each bell bears its number in the chime, this figure being placed on the soundbow.

The bells are cast with flat heads and are bolted to steel girders, being struck by internal hammers operated by wires from a keyboard below.

There is also a mechanical chiming apparatus which was installed in 1889 for the original chime of six bells; this rings changes on the six heavier bells.

In these changes the tenor remains in the same position throughout and strikes at the end of each row or change, leaving the five other bells to change amongst themselves. While 120 different rows or changes are possible on 5 bells, the mechanism only rings 30 of these before the bells come back into rounds, that is playing in descending order of note, written 123456. For the campanologist, the machine plays a plain course of Grandsire Doubles with the tenor covering.

Early in 1948 this church was completely burnt out; the tower still stands, but all the floors and chiming machinery have been destroyed. The bells still hang from their steel girders, but the two tenors are cracked and other bells may also be affected. It is probable that the bells will all be recast.

13. GREENOCK. Well Park Church.

In a large tower with spire hangs one bell, 45 inches diameter, weighing about 15 cwt. The inscription reads:

JAMES DUFF & SONS MAKERS GREENOCK 1867./
WELL PARK FREE CHURCH GREENOCK.

This bell has metal fittings and is counterbalanced. Its tone is much superior to the other two large bells in Greenock from the same foundry.

14. GREENOCK. Town Hall.

There is preserved in the Town Hall a bell, $15\frac{3}{4}$ inches diameter, which is inscribed simply with the figures 1616. This bell has a handbell-type argent instead of canons, and the material is cast steel, rust being quite clearly visible. This being so, it is almost impossible for this bell to have been cast in the seventeenth century, as the casting of steel is of comparatively recent date, and thus there can be little doubt that the figures do not form a date but only some foundry or ship's number.

This bell until recently was in the possession of the Greenock Harbour

Trust, and it had been previously thought¹ that it might have belonged to an old steeple that was erected near the harbour in 1752. The bell was probably cast no earlier than 1850.

15. HOUSTON. The Old Church, formerly St Peter.

In a western tower hangs one bell, 33 inches diameter, weighing about 7 cwt. The inscription reads:

THIS BELL WAS GIVEN/TO/HOUSTON CHURCH/BY/M^{RS}
ELLICE WHEN SHE BUILT THE CHURCH/A.D. 1875/
CAST BY/THO^S LEADBETTER & CO/GLASGOW/N^O 497

This bell is hung for chiming with metal fittings. The present church, built in 1875, is the third on the site, and very little seems to be known about its predecessors. The parish is now amalgamated with Kilellan.

16. INCHINNAN. All Hallows.

This church is cruciform in plan, with a central tower which was only partly erected, the work being stopped at the floor of the bell chamber which now forms the roof. On top of this roof there hangs a single bell, 28 inches diameter, hung in a wooden frame.

The bell is devoid of any inscription, and has a handbell-type argent instead of canons.

The present church was built in 1904, replacing one of 1828. Previous to this latter date the church was substantially twelfth century, and the old bell was taken down at the rebuilding and recast. Thus the present bell almost certainly dates from 1828.

17. INVERKIP. Old Church.

In a closed turret there hangs one bell weighing about 2 cwt.

This bell is accessible only with great difficulty, but as one set of louvre boards is missing, the bell can be seen from the ground with the aid of a telescope. It has a handbell-type argent and is hung with metal fittings. No inscription is visible, but the type of argent makes it probable that the bell is nineteenth century. The church was rebuilt between 1802 and 1805 and the bell is probably of this date or later.

There is also a similar bell, 24 $\frac{1}{4}$ inches diameter, in the Old U.F. Church, with no inscription but dating no earlier than the Disruption.

¹ Smith's *History of Greenock*, p. 364.

18. JOHNSTONE. High Kirk.

A tower with spire containing one bell, 45 inches diameter, inscribed:

ERECTED A.D. 1884./JOHN C. WILSON & CO., FOUNDERS,
GLASGOW./VOCO, "VENITE IN DOMINI TEMPLUM."

This bell is cast with normal canons and is fitted with a wooden wheel and headstock. Ball bearings are used and a heavy counterbalance weight is fitted.

This bell replaces one cast in 1847 at the Whitechapel Foundry, London, by C. & G. Mears. This latter bell weighed 16 cwt., slightly more than the present bell. The tower was built in 1792.

The Roman Catholic Chapel in this parish has a chime of three small bells, all cast by John C. Wilson & Co. Ltd., of Glasgow.

19. KILBARCHAN. West Church.

In an open turret hangs one small bell, about 16 inches diameter, which on being inspected with the aid of a telescope appears to be without inscription. The bell was cast with normal loop canons and moulding wires, and bears a resemblance to the bell over the stables at Castle Semple (*q.v.*).

The building with this bell turret was built in 1724, replacing an earlier church on the same site. A new church was built nearby in 1900 and the old building is used as a hall. The bell therefore may date from 1724 and is certainly eighteenth century.

20. KILBARCHAN. The Municipal Steeple.

A single bell, 29 $\frac{3}{4}$ inches diameter, inscribed:

T. MEARS OF LONDON FECIT 1811

This bell is cast with the usual Whitechapel canons of that date, and is hung in gun-metal bearings with a wooden headstock, the remaining fittings being metal.

The bell is used as the hour bell for the clock, and is rung at 6 p.m. and 10 p.m. every week-day, and for quarter of an hour before the two church services at 12 noon and 6.30 p.m. on Sundays.

The municipal building was erected in 1751.

21. KILLELLAN. St Fillan.

A single bell, 16 $\frac{1}{4}$ inches diameter, inscribed:

[A hand, *fig. 1*] CAROLVS [Stop, *fig. 2*] HOG [*fig. 2*] ME [*fig. 2*] FECIT
[*fig. 2*] 1618/ [Medallion, *fig. 3*]

KILLELLIN BELL/DAVID BURGESS/FOUNDER/GLASGOW/1844.
VOL. LXXXII. 11

This bell has a handbell-type argent and metal fittings. Though the bell has been recast the inscription and stamps on the old bell have been well reproduced.

The old parish church of Kilellan, now in ruins, dates back at least to the thirteenth century. It was renovated in 1635, as this date appears above the south doorway. In 1760 the parish was amalgamated with Houston, and shortly after 1780 it was decided to remove the roof of the old church.

The bell was removed and was kept by one of the heritors. It was recast in 1844, and now hangs in a tree in the grounds of Barochan House. The author is much obliged to Mr D. F. S. Henderson for permission to inspect this bell in his grounds.

Charles Hog was probably the son of George Hog, who cast a bell for Closeburn, Dumfriesshire, in 1606. This bell bears the words "APVD POTTERRAW," showing that the foundry was in the street of that name in Edinburgh.

22. KILMACOLM. Old Church.

One bell, $30\frac{1}{2}$ inches diameter, inscribed:

CLOCK AND BELL PRESENTED TO THE PARISH OF KILMACOLM, BY D.C.R.C. BUCHANAN OF DRUMPELLER. A.D. 1875./
JOHN C. WILSON FOUNDER. GLASGOW.

The bell has rectangular canons and is hung with metal fittings. In the report ¹ on the Presbyterial Visitation in 1734 it is noted: "The west gavel and side walls of Kirk and Bell-house to be rebuilt at a cost of £28 Stg." However, nothing is known about this earlier bell.



Sir David Carrick Buchanan, K.C.B., was the last patron of the living, and when the Act of 1874, which abolished patronage, was passed, he generously surrendered his claim for compensation and presented the church with a clock and bell.


23. KILMACOLM. The Orphan Homes of Scotland.

In the tower attached to the church hangs a chime of twelve bells, tenor $38\frac{11}{16}$ inches diameter in Ab.

¹ *Kilmacolm: A Parish History*, James Murray, p. 131.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 163

Bell.	Inscription.	Note.	Weight.		
			Cwt.	Qrs.	Lb.
Treble.		C	1	0	14
RECAST BY GILLETT & JOHNSTON CROYDON 1946/ LLEWELLINS & JAMES/BRISTOL/1886					
Second.		B ^b	1	1	26
	[The same.]				
Third.		A ^b	2	0	7
	[The same.]				
Fourth.		G	2	1	24
	[The same.]				
Fifth.		G ^b	2	2	25
	GILLETT & JOHNSTON CROYDON 1946				
Sixth.		F	3	0	1
	RECAST BY GILLETT & JOHNSTON. CROYDON, 1946./LLEWELLINS & JAMES/ BRISTOL/1886/ 				
Seventh.		E ^b	4	0	21
	[The same.]				
Eighth.		D	4	2	21
	GILLETT & JOHNSTON CROYDON, 1946./ 				
Ninth.		D ^b	5	1	15
	[The same as the Sixth.]				
Tenth.		C	6	0	7
	[As the Sixth but no full stop after the founders' names.]				
Eleventh.		B ^b	7	3	17
	[The same as the Tenth.]				
Tenor.		A ^b	10	3	18

RECAST BY GILLETT & JOHNSTON. CROYDON, 1946./
LLEWELLINS & JAMES/BRISTOL/1886/
 /THESE BELLS AND CLOCK ARE
ERECTED/IN MEMORY OF/THE LATE
ALLAN DICK OF GLASGOW/BY HIS
SISTERS.

In addition to the above inscriptions each bell bears her number in the chime on the soundbow, and the seven larger bells also have foundry numbers. These bells bear a trade shield which may roughly be described as a saltire between four bells, in chief three wool-packs.

The five lighter bells have their inscriptions and moulding wires incised and for this reason the lettering is in italics.

All the bells have flat crowns, without canons or argent, and are bolted to a steel framework which is in two tiers; the seven lighter bells being below.

A keyboard or clavier is connected to the tongue of each bell. All except the fifth, the eighth and the eleventh are used for the clock chimes, the hour being struck on the tenor.

In 1886 Messrs Llewellyns & James cast a chime of ten bells for this tower, and on recasting in 1946 the present fifth and eighth were added.

The author is much obliged to the Secretary of the Orphan Homes of Scotland for permission to see these bells.

24. LOCHWINNOCH. The Auld Kirk.

The ruins of the Auld Kirk stand on John's Hill. Only the western end now remains, but this possesses a bell turret and clock.

The bell weighs less than a hundredweight and, with the aid of a telescope, it is seen that there are no moulding wires, though the canons are of the normal loop type. No inscription is visible.

The west doorway is dated 1729 and the bell probably dates from this time, though the present iron fittings are certainly later. The design for the weather-vane is worthy of notice.

25. LOCHWINNOCH. St John's.

A single bell, $40\frac{1}{4}$ inches diameter, inscribed:

THE GIFT OF ROBERT ARTHUR, ESQ:/TO THE PARISH OF
LOCHWINNOCH, 1810./RECAST 1849./RECAST AND ENLARGED
1908./BY THE FAMILY OF M^{RS} MARY PATRICK,/GREAT-
GRAND NIECE OF THE DONOR/JOHN C. WILSON & C^O
LTD FOUNDERS. GLASGOW.

This bell has canons, and is fitted with a wooden headstock and wheel which belong to the earlier bell of 1849. This earlier bell was cast by C. & G. Mears at the Whitechapel Bellfoundry, London. It weighed 11 cwt., and though the inscription reads to the contrary, the present bell is also of about this weight.

The church on this site was built to replace the Auld Kirk mentioned above; it is octagonal in plan, with the tower along the east side.

26. MEARNS. Old Kirk.

In a small southern tower there hangs one bell, $25\frac{3}{4}$ inches diameter, which bears no inscription. The bell has no moulding wires and has the handbell-type argent in lieu of canons. Its age therefore cannot be very great, probably dating from the first half of the nineteenth century.

27. NEILSTON. Old Church.

A single bell, $23\frac{1}{4}$ inches diameter, inscribed:

G. MEARS & CO. FOUNDERS LONDON 1863.

This bell comes from the Whitechapel Bellfoundry, London, and is hung with wooden fittings which date from 1863.

The present church ¹ was built in 1763, and as the previous church had no steeple the bell was hung in a large ash-tree near the gate. Unfortunately nothing further seems to be known about it.

Another Whitechapel bell hangs in the turret of the South Church, Neilston. It is inaccessible, but with the aid of a telescope the words "Thomas Mears Founder London" can be made out. Unfortunately the date is obscured by the masonry, but Thomas Mears, junior, was founding from 1810 to 1844.

28. PAISLEY. The Abbey dedicated to SS. James and Mirrin.

A single bell, $15\frac{3}{4}$ inches diameter, reputed ² to be inscribed:

JOHANNES SPECHT ROTTERDAM A.D. 1730.

This bell hangs in a small turret between the north transept and the nave. Unfortunately the bell is cracked and so is disused. The inscription is very much corroded by the action of sulphur on the copper in the bell metal; the first three words of the inscription are discernible, but the date has gone. There is also a border above the inscription.

The Abbey was founded in 1163, but very little is known about any buildings erected at that time. In 1307 it was burnt by the English and was later repaired. Abbot Shaw (1459-1498) built a lofty tower over the principal gate, and his successor John Hamilton, later Archbishop of St

¹ *History of Neilston*, Dr Pride, p. 78.

² *Paisley Abbey*, A. R. Howell, p. 82.

Andrews, who was Abbot from 1525 to 1547, "built¹ a tower, second to none in our own country, at immense expense, which from the first rested on an insecure foundation and when hardly finished fell by its own weight."

From its instability it would appear that it was a central tower supported on the four pillars at the crossing, as at present in the reconstructed church.

It is doubtful if the tower was ever rebuilt after this collapse, as the old wall that was built at the east end of the nave was probably of pre-Reformation date. The choir was then allowed to fall into ruins and the nave was used as the parish church. On top of this wall at the east end there was a bellcote, which housed this small bell, and due to the proximity of the dwelling-houses the coal fumes, which contain sulphur, have had a bad effect on the inscription.

A large bell² is said to have hung in one of the earlier towers and to have been carried off by the English soldiers under Cromwell to Durham Cathedral. Unfortunately all the eight bells in this Cathedral were recast in 1693 and none of the inscriptions now relate to Paisley. It is however doubtful if there was anywhere in the Abbey to house a large bell in Cromwell's time; there was no central tower, and the old bellcote on the roof would not hold a larger bell than the present one, so it is highly improbable that any bell was removed at that time.

Shortly after the First Great War a move was made to restore the Abbey. The dividing wall between the choir and the nave was removed and the central tower and choir were rebuilt. The tower, however, is empty; originally it was proposed to have a ring of bells in it, but the architect decided that the tower would not be strong enough to stand the swinging of the bells.

29. PAISLEY. High Kirk.

A single bell, 49 inches diameter, weighing about one ton, inscribed:

JAMES DUFF & SONS/MAKERS/GREENOCK/1872

This bell is fitted with a wooden wheel and headstock and is heavily counterbalanced.

The steeple, though it is built on to the High Kirk, was erected and is still owned by the municipal authorities, who provide a ringer for the church services.

The steeple³ was built just prior to 1776, for in that year a bell was bought weighing 9 cwt. 1 qr. 14 lb. and costing £75, the founder being unknown. This bell lasted for forty-four years, and when being rung at

¹ *Lees' Paisley Abbey*, p. 189.

² *Ibid.*, p. 215.

³ *The History of the High Kirk*, Robert Brown.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 167

the Accession of King George IV it was cracked. The metal round the crack was cut out but to no avail, and a public subscription was started for its recasting. This was carried out at the Whitechapel Bell Foundry, London and the bell was inscribed:

T. MEARS OF LONDON FECIT 1823.

It was nicknamed Roaring Tom or Jolly Tom after one of the more active collectors of subscriptions. This bell's tone was better than its predecessor, and the weight was $18\frac{1}{4}$ cwt.

This bell was cracked in 1865 while being tolled for the funeral of Lord Palmerston, and on returning to London it was recast by Messrs Mears & Stainbank. The weight was increased to 22 cwt.

In six years' time the bell was again cracked and was recast in its present form. While the bell was away in Greenock being recast the Whitechapel bell, now in Paisley Museum, was put in the tower.

30. PAISLEY. Lylesland Parish Church.

A single bell, 30 inches diameter, weighing about 6 cwt., with the note E.

**SOLI · DEO · GLORIA · CORNELIS · OVDEROGGE · FEGIT · EN · D · I · OI · O ·
ROTTERDAM · ANNO DOMINI 1648/FOR · THE · TOWNE · OF · PASLAY/
RECAST BY/J. MILLER REID/GLASGOW/1897.**

The fittings are all metal, the frame being of wood. The bell has loop canons of the modern type.

This bell has had an interesting career.¹ In 1647 the Town Council resolved to buy a new clock at a cost of £400 and to build a "new prick" in the Tolbooth for a bell. This building stood at the Cross in Paisley and was used both as a Town Hall and gaol, and its first bell was cast in Rotterdam in 1648 by Dirk Ouderogge. This bell lasted till 1863, when on 10th March it was cracked while being rung to celebrate the marriage of the Prince of Wales, later King Edward VII.

The bell was then removed from the Cross Steeple and a completely new one was bought from the Whitechapel Bellfoundry, London, inscribed:

MEARS & CO. FOUNDERS LONDON.

This bell, $33\frac{3}{4}$ inches diameter, was then put up in the Steeple, but was removed when the Steeple was declared unsafe and taken down in 1870. While the High Kirk bell was being recast in Greenock in 1872 this bell was

¹ *Paisley Daily Express*, 27th December 1945.

for a time used in that church's steeple. It is now to be seen in the Paisley Museum.

The broken Dutch bell was bought by a local inhabitant, who had it recast by Messrs Llewellyns & James of Bristol, with the old inscription reproduced. In 1886 this bell was presented to Lylesland Church, which was then about to be opened for public worship. However, in 1893 the bell was cracked and was again recast, this time by J. Miller Reid of Glasgow. The reproduced lettering on this present bell is the same size and similar to that to be found on an original bell by Cornelius Ouderogge in the church of the Holy Rude, Stirling. This latter bell is inscribed:

+ SOLI · DEO · GLORIA + CORNELIS · OVDEROGGE · FECIT · ROTTERDAM ·
ANNO · DOMINI · 1657 / TO · STERLING · TOWN · I · DOE · BELONG.

31. PAISLEY. St James.

Ring of eight bells; tenor 50 $\frac{3}{4}$ inches diameter, in Eb.

Bell.	Inscription.	Weight.		
		Cwt.	Qrs.	Lb.
Treble.	+ JOHN TAYLOR & CO + LOUGHBOROUGH + LEICESTERSHIRE + 1909 / RECAST / BY / PETER COATS, ESQ., / GARTHLAND PLACE, PAISLEY, / SON OF SIR PETER COATS / OF AUCHENDRANE, AYR.	5	1	27
Second.	[Same as Treble.]	5	3	4
Third.	[Same as Treble.]	6	3	3
Fourth.	[Same as Treble.]	7	3	10
Fifth.	J: TAYLOR & CO ^o FOUNDERS LOUGHBOROUGH 1882.	10	0	27
Sixth.	J: TAYLOR & CO ^o BELLFOUNDERS LOUGHBOROUGH 1882.	12	0	8
Seventh.	[Same as Sixth.]			
Tenor.	J: TAYLOR & CO ^o BELLFOUNDERS LOUGHBOROUGH 1882. / THIS PEAL OF EIGHT BELLS / WAS PRESENTED BY / SIR PETER COATS, KNIGHT / OF AUCHENDRANE, AYR.	22	1	17

A complete ring of bells from the Loughborough foundry of Messrs John Taylor & Co. In 1882, when the church was first opened, there was a

ring of eight bells, and in 1909 the four lighter bells were recast and the remaining bells were returned on the Simpson principle.

The four lighter bells have the cross (fig. 5) on their inscriptions. The bells are all hung for change ringing in a frame of wood and iron dating from 1882, with plain bearings.

The complete church, with a lofty tower with spire rising to a height of 180 feet, was the gift of Sir Peter Coats. The first tower¹ gave way due to its having a defective foundation, and it had to be taken down entirely and then rebuilt.

The English system of change ringing has been practised here for some time past, but up to 1947 only four peals of over 5000 changes have been rung. The first was one of 5040 changes of Grandsire Triples in 3 hours 28 minutes on 11th March 1922, rung by a band mostly of Englishmen. The next peal on 2nd March 1929 was rung by a local band. It was 5040 changes of Bob Major in 3 hours 17 minutes.

Just before the war a visiting band from England rang a peal of Cambridge Surprise Major, and in recent times a local band has rung a peal of Kent Treble Bob Major.

32. PAISLEY. George A. Clark Town Hall.

A chime of ten bells; tenor note E^b.

<i>Bell.</i>	<i>Note.</i>	<i>Inscription.</i>	<i>Weight.</i>		
			<i>Cwt.</i>	<i>Qrs.</i>	<i>Lb.</i>
Additional Treble.	F	CAST BY GILLETT BLAND & C ^o CROYDON 1882	4	3	3
Treble.	E ^b	[<i>Same as Additional Treble.</i>]	5	3	7
Second.	D	CAST BY GILLETT BLAND & C ^o CROYDON 1881	6	1	11
Flat second.	D ^b	[<i>Same as Additional Treble.</i>]	7	0	5
Third.	C	[<i>Same as Second.</i>]	7	0	11
Fourth.	B ^b	[<i>Same as Second.</i>]	7	3	20
Fifth.	A ^b	[<i>Same as Additional Treble.</i>]	9	2	24
Sixth.	G	[<i>Same as Additional Treble.</i>]	11	0	15
Seventh.	F	[<i>Same as Second.</i>]	13	3	1
Tenor.	E ^b	CAST BY GILLETT BLAND & C ^o FOUNDERS & CLOCK MAKERS CROYDON + 1881 +	19	2	8

A complete chime of bells from the Croydon Bell Foundry of Messrs Gillett, Bland & Co., now Messrs Gillett & Johnston, Ltd.

¹ Brown, *History of Paisley*, vol. ii. p. 355.

The design of the tower necessitates that two bells be hung in each of the four wall openings on each side of the tower with the tenor and treble inside. All are hung stationary or dead and are struck with hammers.

The positioning of the bells, half out in the open, gives rise to an unequal distribution of the sound of each bell. Bells on the opposite side of the tower from the listener are hardly heard at all.

There is no keyboard for manual playing, and the chime is operated entirely by the clock. The Cambridge Quarters, sometimes erroneously called the Westminster Chimes, are struck on the second, third, fourth and seventh bells, with the tenor as the hour bell. The chime plays tunes at noon and every third hour after, one tune for each day. The mechanism for this consists of several metal cylinders about one foot diameter. On the outside of these cylinders are positioned metal pegs, which engage in trip levers that release the hammers on the bells, when the cylinders are rotated.

There are in all seven cylinders or barrels, six being pegged with seven tunes each and the remaining one with change ringing for joyous occasions.

At the present time (1947) the barrels and pegs have become worn, and as a result the timing of the tunes is not all that could be wished.

33. PAISLEY. The Museum.

As well as the Whitechapel bell mentioned under Lylesland Church, the Museum possesses a bell, $12\frac{1}{2}$ inches diameter, inscribed:

SNEDON · HOSPITAL · 1707

This bell has canons and an old wooden headstock. The Snedon Hospital or Poorhouse was opened in May 1752. It was governed by a number of Directors, and in their committee minutes it is recorded¹ that:

"2d December 1767 They have also ordered that the bell in the Hospital be cast anew, and about 12 lbs weight added thereto, and it is to be sent to Bristol for said purpose. The present weight of the bell is 49 lb 12 ozs."

34. PAISLEY. Municipal Buildings.

Kept in the Municipal Building are the famous Silver Bells. These were the prize for the Paisley Races which were instituted in 1620.

The bells are made of silver and are conical, one 1 inch diameter and the other $2\frac{1}{2}$ inches diameter. The ends are closed by perforated hemispheres.

The sound is produced by a ball inside and comes out through the slit in the round end.

Both are of the same date, the smaller bearing the date 1620 and a coat

¹ Brown, *History of Paisley*, vol. ii. p. 21.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 171

of arms with the initials HC, probably standing for Hew Crawford of Clobberhill, who won the prize first. The larger bears a different coat of arms, three roses with a border of Stewart check between, and the initials O.P. These are thought to be the old Arms of the Burgh.

35. PORT-GLASGOW. Old Church.

In a closed turret in the Old Parish Church there hangs a single bell, 27½ inches diameter, inscribed:

J DUFF MAKER GREENOCK 1839

The lettering is placed on the soundbow so that the founder could use a solid pattern instead of a strickle or sweep. The crown is cast with a handbell-type argent, and the shape is somewhat like a flower-pot with almost straight sides. This shape was used in England in the thirteenth century, but soon became obsolete as the sound given out by such a bell was far from being satisfactory. This can, unfortunately, be said of the present bell.

The parish of Port-Glasgow was formed out of the parish of Kilmacolm in 1694, and a church was built here soon after. On 4th October 1729 a representation¹ was made by the Bailie of Port-Glasgow to the Town Council of Glasgow, in the name of the Port, showing that the church bell "having but a weak sound, was not fully heard by the inhabitants of the Port." The Glasgow Town Council decided that a bell that had been left or gifted to them by Mr Alexander McInzie, one of the clerks of session, should be sent down and the old one taken to Glasgow. This bell had an inscription upon it: "Soli Deo Gloria." It was sold to the proprietor of a Clyde steamer when the church was demolished in 1823. What subsequently became of it is not known. From the Latin inscription it would seem probable that the bell was Dutch, either from the Burgerhuys' foundry at Middelburg, or C. Ouderogge's at Rotterdam. At Roseneath, just over the Clyde, is a bell from Middelburg, dated 1610, bearing the same words.

36. PORT-GLASGOW. The Town Hall.

In the steeple hangs one bell, 44 inches diameter, inscribed:

JAMES DUFF & SONS. MAKERS GREENOCK 1879./
TOWN OF PORT GLASGOW.

The bell is hung for ringing and has metal fittings.

The present Town Hall was built in 1815 and a bell was then put in the

¹ *History of Port-Glasgow*, W. F. Macarthur, p. 213.

tower. Later, however, legend has it that one of the bailies thought that the bell would be improved by a coat of green paint; this was given and it was then found that the tone of the bell was completely altered. Thus the paint had to come off to make the bell usable. It was removed first by scraping and then by boiling in oil. Unfortunately the bell did not survive this last ordeal and was cracked. Presumably the present bell in the tower is the result of the recast; however, the clock was presented in 1878 and a more likely explanation of the 1879 recasting is that the old bell was not large enough to proclaim the hours to the whole town.

Also in the Town Hall is the Town Crier's bell, $5\frac{3}{4}$ inches diameter and $4\frac{1}{2}$ inches to the top of the crown, which has the following inscription incised on it with a sharp punch:

THE ··· TOWN ··· OF ··· PORTGLASGOWS ··· BF ··· ANNO ··· 1707

On the crown there is a cast loop, about 1 inch diameter, through which is riveted a larger iron handle of contemporary date. The material is brass.

The author's thanks are due to Mr John Kerr, lately Town Treasurer, for confirmation of the above story.

37. RENFREW. Old Church.

A single bell, 50 inches diameter, weighing 22 cwt. 2 qrs. 11 lb. The inscription reads:

Mears & Stainbank, Founders, London 1885.

The first letter in each word is of an ornamental set with a floral design, and the remaining part of the inscription band is filled with a border. There is also another border above and below the inscription.

The bell is cast with a Doncaster type head and was cast at the Whitechapel Bell Foundry, London. This firm recently rehung the bell in ball bearings and with a modern type cast-iron headstock. It is one of the few single bells in the county that are fitted with a stay and slider so that they can be left inverted. This bell is the largest church bell in the county, being 22 lb. heavier than the tenor at St James, Paisley. However, it is not counterbalanced as a whole, but there is a weight on the clapper above the pivot point which is some 8 inches below the inside crown of the bell, forming what is known as a balanced clapper.

In the possession of the Kirk Session is a small bell, $1\frac{7}{8}$ inches diameter, $1\frac{5}{8}$ inches high to top of crown, and $2\frac{3}{8}$ inches high to top of the ring handle. It was shown at the Glasgow Exhibition of 1911 and a description is given in the *Catalogue*.¹ The bell is uninscribed and without ornament other than

¹ *Catalogue of Glasgow Exhibition of 1911*, vol. ii., p. 1098.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 173

a faint line just above the soundbow: rounded shoulders and a little ring-shaped handle at the top. It was found underneath the Parish Church during alterations and is almost undoubtedly a sacring bell, perhaps of fifteenth century date.

The sacring bell was rung to draw the people's attention to certain more important parts of the old Latin service. This is the oldest church bell in the county. A similar bell from Paisley is preserved in the National Museum of Antiquities in Edinburgh.

38. RENFREW. The Town Hall.

A single bell, 45 inches diameter, about 15 cwt., inscribed:

JOHN MORRISON & SONS FOUNDERS RENFREW 1878.

This bell is used for the clock and is hung for ringing with metal fittings. The crown has no canons but four vertical webs extend from it to a circular flange which is bolted to the metal headstock. This obviates the need for drilling bolt-holes through the crown of the bell, but it makes the centre of gravity further from the axis of rotation and so makes the bell more out of balance. To counteract this effect weights have been bolted to the headstock.

The present building dates from 1872, replacing an earlier one of 1660.

39. WEMYSS BAY. Private Episcopal Chapel of the Right Hon. Lord Inverclyde.

A western tower with spire containing a chime of eight bells; tenor 42½ inches diameter, in G natural, inscribed:

Bell.	Inscription.	Approx. Weight.		
		Cwt.	Qrs.	Lb.
Treble.	JOHN C. WILSON & CO, FOUNDERS, GLASGOW. A.D. 1878.	3	2	0
Second.	[The same.]	3	3	0
Third.	[The same.]	4	3	0
Fourth.	[The same.]	5	2	0
Fifth.	[The same.]	6	2	0
Sixth.	[The same.]	7	3	0
Seventh.	[The same.]	9	3	0
Tenor.	THIS CHURCH WAS ERECTED BY GEORGE BURNS, OF WEMYSS BAY. A.D. 1878./JOHN C. WILSON & CO, FOUNDERS, GLASGOW.	14	2	0

The tenor is hung for ringing with metal fittings, the remaining bells are hung dead in three tiers and are struck with hammers. All the bells are cast with canons. The hammers are connected by wires to a keyboard below.

THE CHURCH BELLS OF DUNBARTONSHIRE.

Dunbartonshire, though only a small county, is divided into two separate portions. At the Reformation the western or larger part consisted of seven parishes, and the other was the single parish of Lenzie, which was later divided into Kirkintilloch and Cumbernauld.

Since the Reformation the parishes of Rhu, Arrochar, and New Kilpatrick have been formed in the main part of the county.

The older bells in the county may be classified thus:

(I.) 1 mediæval	Unknown founder.
(II.) 2 seventeenth century	2 Dutch.
(III.) 2 eighteenth century	2 Scottish.

The single mediæval bell in the county is the Skellat bell preserved in the Municipal Building at Dumbarton. This bell, a photograph of which is shown on Pl. XXXIV, 1, is of great age and in all probability belonged to some early Celtic saint. The very early bells of this type were made of riveted iron plates, which when bent were dipped in molten bronze to give a corrosion-resisting surface and also to improve the tone. As this handbell is made of cast bronze it is evident that the age is less than those of the riveted construction.

Bells of this type are very rare in Scotland, probably due to the ease by which they could be destroyed and the length of time that has elapsed since they were made. In the Glasgow Exhibition of 1911 there were eight such bells exhibited, including the Skellat bell of Dumbarton, all dating from about A.D. 600 to A.D. 1000. The Catalogue of the Exhibition gives a full description of all of them, together with a photograph of each and an introductory article on the use of bells by Dr. F. C. Eeles.¹ So far as is known this number is all that remains of the Scottish Celtic quadrangular handbells.

The history of this bell is far from clear and, as there is no inscription, the bell itself can tell us little about its owners. Mr Fergus Roberts, F.S.A.Scot., who was until recently Town Clerk of Dumbarton, has collected

¹ *Catalogue of the Glasgow Exhibition, 1911, vol. ii., p. 1005.*

some information about its history from the Burgh Records, and it is to be hoped that this information may soon be published. The bell has been in the possession of the Burgh since the early part of the seventeenth century and was latterly used as the dead bell.

The earliest post-Reformation bell in the county is at Roseneath, being inscribed (fig. 15 (a) and Pl. XXXIV, 2):

SOLI · DEO · GLORIA · IAN · BURGERHVYS · ME · FECIT · 1610

Though only a small bell the tone is good and, like most of the bells from this foundry, the surface of the casting is smooth and well defined. The bell now hangs in a porch, preserved as an object of antiquarian interest. Though not cracked, it was thought desirable to replace it by a new bell when the soundbow was found to have been worn rather thin by the impact of the clapper over the centuries.

Jan Burgerhuys I was the first of this family of founders and worked at Middelburg in Holland. M. Jan Arts tells the author that he was probably initially in service with the city bellfounder of Middelburg, Hendrick van Trier, with whom he had become acquainted at Aix-la-Chapelle. M. Arts knows of three bells by this founder being dated 1607, 1613 and 1614. In Scotland there are at least six others apart from this Roseneath bell. They are at Melrose Abbey, 1608; Edinburgh (Canongate Tolbooth), 1608; Earlston, Douglas and Fyvie, 1609; Crossmichael, Wigtownshire, 1611. Jan I died in Middelburg in 1617 and is buried in the Oude-Kerk there.

He was succeeded by his son Michael Burgerhuys, who was born before 1585 at Aix-la-Chapelle, and died at Middelburg in 1651 and was buried there on 5th April. M. Arts knows of 22 of his bells ranging from 1617 to 1645. In Scotland the author has a record of 23, all remaining to this day, covering the period 1617 to 1647. This Dutch founder cast more bells for Scotland than any of his countrymen.

Michael was succeeded by his son Jan II, who died in Middelburg in 1679. His work in Holland so far discovered numbers 17 bells covering the years 1636 to 1676, though in Scotland the range is only 1642 to 1671 represented by the bells at Glass, Aberdeenshire, 1642; Hutton, Berwickshire, 1661; Farnell, 1662; Panbride, 1664; and Abdie, 1671.

It will therefore be seen that this foundry had a flourishing trade with Scotland amounting to at least 34 bells.

The bell in the old church at Kirkintilloch is also Dutch, being inscribed:

[Fig. 4] GERARD · KOSTER · ME FECIT · AMSTELREDAMI ·
ANNO · 1663/ [fig. 16]

Though this bell has hung in an exposed position ever since it was cast,

the surface is remarkably free from corrosion. On the waist there is the large medallion of the Arms of the City of Glasgow, but the reason for its presence is obscure. Kirkintilloch has been a Burgh of Barony since 1184 and has never had any administrative agreement with Glasgow. In the People's Palace Museum, Glasgow, is preserved a bell which bears almost exactly the same inscription as this bell. The wording is identical but the head (fig. 4) does not appear. This bell bears the medallion of the Arms of the City of Glasgow as above, but in this case it is correct, as the bell was cast by order of the Glasgow Town Council for municipal use. It is illustrated in Pl. XXXV, 1.

There were three founders of the name of Koster. Gerrit or Gerard I was appointed master founder to the city of Amsterdam on 27th November 1606 after the death of Cornelis Amoroy. He cast two cannon for Vlissingen (Flushing) in 1617, and M. Arts knows of four bells cast by him in the years 1608, 1611 (two), 1615. None of his work has been so far found in Scotland. He was succeeded by his son Assuerus Koster, who was born in Amsterdam in 1604, was married on 5th August 1626, and died in September 1661, being buried in the Nieuwe-Kerk in Amsterdam. In Holland nine bells have been noted ranging in date from 1633 to 1649. His sole work in Scotland is a cannon preserved at Dunstaffnage Castle, near Oban, which is inscribed:

ASUERUS KOSTER AMSTELREDAMI ME FECIT

Ward Lock's *Guide to Scotland* gives the legend that the cannon formed part of the armament of a galleon of the Spanish Armada and was recovered from the bottom of Tobermory Bay. The latter part is probably correct, but it could not have formed part of the armament of such a ship as its founder was not born till 1604, some sixteen years after the sailing of the Armada.

He was succeeded by Gerrit II, his eldest son, who was born on 3rd October 1627. He was elevated to the position of "City gunfounder" on the occasion of his marriage on 30th November 1645 to Maria Gorssius. M. Arts knows of three of his bells in Holland cast in 1659 (two) and 1669. In Scotland we have the Kirkintilloch and the Glasgow examples already mentioned, and Stoneykirk, Wigtownshire, 1663.

The disused bell at Bonhill next comes to our notice, the inscription reads (fig. 15, b):

FURNISHED · BY · THE · HERITORS · MINISTER · KIRK · SESSION · /AND
· PARISHONERS · OF · BONNILL · IN · THE · YEAR · 1712 · R · M · /FECIT ·
EDR :

Though the bell itself is a smooth casting, the lettering is rough and well raised from the surface of the bell.

At Corstorphine there is a bell which bears the initials R.M. and the date 1728, and it is likely that these two bells were cast by one Robert Maxwell of Edinburgh.

The Edinburgh foundry was flourishing at this time, and in the records of the Incorporation of Hammermen of Edinburgh there is mention of the names of several bellfounders.

John Meikle was a member in the years 1662 and 1693, but there is no mention of him in the roll of 1682. He cast the bell at Kirkliston in 1687, and was probably succeeded by Robert Maxwell, who on a bell at Dunblane writes his name as ROBERTUS MAXUELL and uses the shield illustrated in fig. 7. The date of this bell is 1723. He cast a bell for Peebles in 1714, and the second and third of the old rings of bells in St Giles' Cathedral, Edinburgh, in 1706 and 1728.

Maxwell obviously was of some importance in the Incorporation, as he was Deacon Convener in 1638 and 1639 and was also made a Freeman in the latter year.

Another founder who was Deacon Convener of the Trades was John Milne, in 1766. He cast the bells at Duddingston in 1755 and Kilbirnie in 1753.

The records of the Incorporation of Hammermen of Edinburgh, as opposed to those of Canongate, are preserved in Huntly House, Edinburgh.

Before 1680 the records are hardly legible to the average student, and so far the author has not been able to find out about Charles and George Hog, who were founding in Edinburgh in the early years of the seventeenth century.

Of the modern bells in the county, the Whitechapel Bell Foundry, London, established in 1567, cast bells for Dumbarton, 1855; Rhu, 1858; and Bonhill, 1837, though the latter has been recast.

Messrs Gillett & Johnston, Ltd., of Croydon, Surrey, cast the carillon at Dumbarton, and the chimes at Clydebank Town Hall and Old Kilpatrick, both octaves.

Messrs John Taylor & Co. cast the two chimes at Helensburgh. It is hoped to hang the octave there in a frame suitable for scientific change ringing when circumstances permit. This firm cast a number of the rings of bells hung for change ringing in Scotland, those at Paisley; Glasgow, St Mary's Cathedral; Edinburgh, St Cuthbert's and St Mary's Cathedral; Inveraray and Alloa, all of which have added to their reputation.

They also cast the 57-cwt. hour bell in Glasgow University.

The Glasgow foundry of John C. Wilson is well represented in the county, chiefly by single bells, but also by part of the chime of six bells at Cardross. The history of this firm is to be found in the section on Renfrewshire bells.

A LIST OF BELLS ARRANGED ACCORDING TO PARISHES.

In the following list particulars are given of bells in all the older parish churches, and in some of the modern churches with chimes or bells of any magnitude. Municipal bells are also noted.

The diameters of all accessible bells have been obtained and from them an appropriate weight has been computed. In certain cases the exact weight is known, and where the actual and approximate weights appear in the same list the latter are marked thus ††.

Unless otherwise stated the inscriptions begin on the band just below the shoulder angle, and the end of each line is denoted by an oblique stroke.

All crosses, stops and borders are indicated, and are illustrated when they are of interest. All the lettering found in the county is of the Roman type.

The following abbreviations are used:

- / Denotes the end of a line.
- (J) The crest of Messrs Gillett & Johnston, Ltd.
- (T) The crest of Messrs John Taylor & Co. Ltd.
- †† Denotes that the weight is only approximate.

1. ARROCHAR. Tighness Church.

In a western tower there hangs one bell, 20 inches diameter, which is devoid of any inscription. Judging from the roughness of the casting, and from the fact that the canons and argent are of the older type, it is probable that the bell was cast when the parish was formed in 1733.

The clapper is attached to the crown staple by a leather baldrick, or strap. This method of suspension is very unusual at the present time; in England it had become out of date by the sixteenth century.

There is no wheel but a wrought-iron lever of complicated design, which is coeval with the bell.

2. BONHILL. Old Church.

A tower containing one bell, 42½ inches diameter, inscribed:

BONHILL PARISH CHURCH BELL CAST BY MEARS OF
LONDON IN 1837./RECAST BY JOHN C. WILSON. FOUNDER.
GLASGOW. IN 1863. N^o 783./REV: JOHN ALISON. M.A.
MINISTER.

The bell cast in 1837 came from the Whitechapel Foundry, London,

and is given in their lists as weighing 12 cwt. The wooden fittings for this bell were used again for the present bell.

The bell that was used prior to 1837 is preserved in the Entrance Hall. It is badly cracked, and is inscribed:

**FURNISHED · BY · THE · HERITORS · MINISTER · KIRK · SESSION · /AND
· PARISHONERS · OF · BONNILL · IN · THE · YEAR · 1712 · R · M · /FECIT ·
EDR :**

The bell is 16 inches in diameter. For a photograph and a scale reproduction of part of the inscription see Pl. XXXV, 2, and fig. 15, *b*.

The bell was probably cast by Robert Maxwell of Edinburgh.

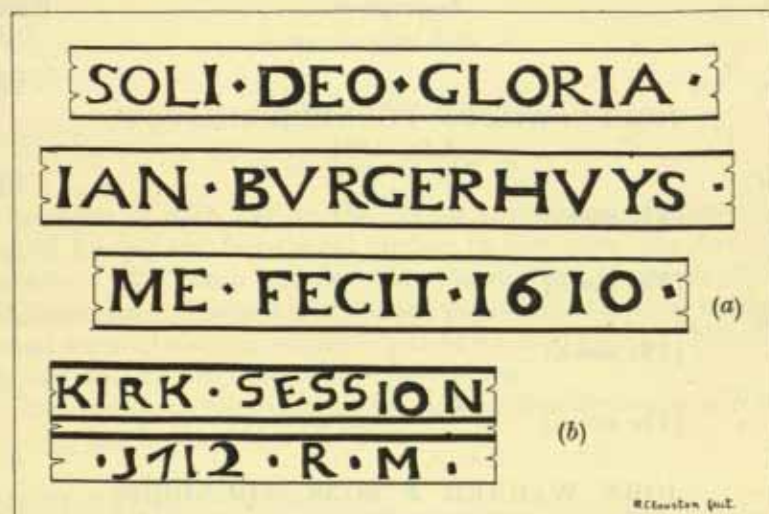


Fig 15 (b).

(a) Inscription on disused bell at Roseneath, 1610.

(b) Part of inscription on disused bell at Bonhill, 1712.

3. CARDROSS. Old Church.

The old parish church was burnt down in an air-raid during the late war. The single bell, which the western tower contained, fell down, but does not seem to have been cracked. It is 20 inches diameter and without inscription, but is obviously the product of a brass foundry as a full-sized pattern was used instead of the normal strickle. There are no canons, only a handbell-type argent.

The bell probably dates from the first half of the nineteenth century.

The pre-Reformation church stood at the eastern end of the present parish, opposite the Burgh of Dumbarton, and the ruins still remain.

In 1644 a new church was built on the present site and it was rebuilt in 1826.

It is recorded¹ of the old church of 1644 that "There was a small bell tower from which the bell was suspended, which summoned the inhabitants to worship."

4. CARDROSS. New Church.

A tower with a short spire containing a chime of six bells; tenor $32\frac{1}{8}$ inches diameter.

<i>Bell.</i>	<i>Inscription.</i>	<i>Approx. Weight. Cwt.</i>
Treble.	JOHN C. WILSON. FOUNDER GLASGOW. A.D. 1871	$2\frac{1}{2}$
Second.	[<i>The same.</i>]	$2\frac{3}{4}$
Third.	[<i>The same.</i>]	3
Fourth.	[<i>The same.</i>]	4
Fifth.	[<i>The same.</i>]	5
Tenor.	JOHN WARNER & SONS, FOUNDERS, LONDON. 1914.	6

Below the inscription on the tenor is a trefoil border.

The bells are all hung dead in two tiers in a wooden frame, none of them has canons or clappers. They are struck by hammers operated by the clock or from an independent keyboard.

The five lighter bells came from the Gorbals Foundry, Glasgow, and the tenor was cast at the Cripplegate Foundry, London.

5. CLYDEBANK. Town Hall.

A tower containing a chime of eight bells; tenor $42\frac{1}{8}$ inches diameter, in the key of G.

¹ *Annals of Garelochside*, W. C. Maughan, pp. 245, 251.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 181

<i>Bell.</i>	<i>Inscription.</i>	<i>Weight.</i>		
		<i>Cwt.</i>	<i>Qrs.</i>	<i>Lb.</i>
Treble.	GILLET & JOHNSTON, CROYDON, 1929/1	2	1	22
Second.	<i>Same foundry data</i> /2	2	3	9
Third.	<i>Same foundry data</i> /3	3	2	18
Fourth.	<i>Same foundry data</i> /4	4	3	7
Fifth.	<i>Same foundry data</i> /5	5	3	17
Sixth.	<i>Same foundry data</i> /6	7	3	5
Seventh.	<i>Same foundry data</i> /7	9	3	26
Tenor.	<i>Same foundry data</i> /8	14	1	8

The number of each bell in the chime appears on the soundbow. The bells are all hung dead from steel girders in two tiers, the five lighter ones being above. The clock chimes the Cambridge Quarters by means of external hammers. There is a keyboard provided, the wires being connected to a special form of clapper which is pulled on to the bell. None of the bells have canons and all are cast with a flat crown.

The clock and bells were erected by public subscription as a War Memorial to those who fell in the 1914-18 War.

6. CUMBERNAULD. St Ninian.

In a western turret hangs one bell, weighing about 2 cwt., which bears the inscription:

JOHN C. WILSON/FOUNDER/GLASGOW/1854

The bell is cast with canons and has metal fittings.

This parish was formed in 1649¹ when the old parish of St Ninian, Kirkintilloch, was divided. The present fabric dates from about this date.

7. CUMBERNAULD. St Andrew.

In a tower hangs one bell, 40 inches diameter, which is inscribed:

ERECTED AT CUMBERNAULD FREE CHURCH A.D. 1887/
JOHN C. WILSON & CO., FOUNDERS. GLASGOW.

¹ *New Statistical Account of Scotland.*

The bell is cast with canons and has metal fittings. The bearings are of the non-lubricated type, the gudgeon pin running on two rollers.

The church was built originally in 1743 and was rebuilt in 1825.

8. DUMBARTON. Old Church.

A tower with spire containing one bell, $39\frac{1}{4}$ inches diameter, weighing about 10 cwt., which is inscribed:

C & G MEARS FOUNDERS LONDON 1855.

The bell is hung for ringing inverted, being fitted with a stay and slider. The fittings are of wood mounted in a cast-metal frame. A counterbalance weight is provided, as is a chiming hammer for the clock.

The bell is, unfortunately, cracked in the crown, but its tone is unimpaired. This site has had a church for some considerable time. A church¹ was destroyed by Lord Fleming, Governor of the Castle in Queen Mary's time. It was rebuilt about 1590 and had a spire at the west end. The present church dates from 1811.

9. DUMBARTON. High Kirk.

A tower with spire containing one bell, $42\frac{1}{2}$ inches diameter, inscribed:

JOHN C. WILSON. FOUNDER. GLASGOW N^o 888/PRESENTED
TO THE CONGREGATION OF THE FREE CHURCH OF
DUMBARTON/BY JAMES WHITE. OVERTOUN. A.D. 1866./ G

The bell is cast with canons and has wooden fittings with a metal counterbalance weight. The present church² was built in 1864.

10. DUMBARTON. Roman Catholic Church of St Patrick.

A tower containing a carillon of twenty-three bells; tenor $44\frac{5}{16}$ inches diameter, in F sharp, and an Angelus bell.

The Angelus bell weighs $19\frac{3}{4}$ cwt. and has the note F natural. The inscription reads:

GILLET & JOHNSTON, CROYDON, 1927. (J)/1849/D.O.M./AD
HONOREM S. PATRICII, HIBERNIE APOST. TIT. HUIUS
ECCLESIE/QUI IN HAC REGIONE PRIMO LUCEM VIDEBAT/
FELICITER REGNANTE PIO PP. XI/PROCURANTE REVMO.

¹ *Castle and Town of Dumbarton*, D. Macleod, p. 96.

² *Ibid.*, p. 96.

- DOM. HUGONE CANONICO KELLY./HANC CAMPANAM,
ILLMUS. ET REVMUS. DOM. DONALDUS MACKINTOSH./
ARCHIEPISCOPUS GLASGUENSIS./BENEDIXIT ET CONSE-
CRAVIT./DIE 17 MENSIS MARTII M.C.M. XXVII./ET VERBUM
CARO FACTUM EST./LAUDO DEUM VERUM PLEBEM VOCO,
NUBEM FUGO, FESTA DECORO./CONGREGO CLERUM,
DEFUNCTOS PLORO./1

This bell is hung for ringing inverted and is mounted on ball bearings in a steel frame. Apart from the lettering there is also a border below the inscription band, and on the waist appear the Papal Arms and the Bishop's Arms.

It is rung as the Angelus bell at 7 a.m., 12 noon and 6 p.m., being operated by a chiming hammer controlled by the clock. It is also used as the dead bell.

Above this bell hangs the carillon in a steel frame in three tiers. Each bell bears the founder's name and the date, and in addition each bell is dedicated to a particular saint, together with the name of the church. The tenor has a longer inscription on similar lines to that on the Angelus.

The carillon was all cast at the Croydon Foundry of Messrs Gillett & Johnston, Ltd., during the years 1927 and 1928. Originally, in 1927, there was installed a chime of eight bells and the Angelus bell. In the next year the chime was augmented to its present size.

All the bells in the carillon are hung dead and are cast with flat heads. They are fitted with a special form of clapper which is drawn on to the bell from the inside when the key on the keyboard is depressed.

The clock uses two bells for the quarters and strikes the hours on the tenor. The particulars of the carillon are:

Bell.	Note.	Weight.			Bell.	Note.	Weight.		
		Cwt.	Qrs.	Lb.			Cwt.	Qrs.	Lb.
Treble.	F \sharp	0	2	1 $\frac{1}{2}$	13	F \sharp	3	0	6
2	F	0	2	7	14	E \sharp	3	2	17
3	E	0	2	21	15	E	4	1	20
4	D \sharp	0	3	8	16	D \sharp	4	2	0
5	D	0	3	18 $\frac{1}{2}$	17	D	4	3	25
6	C \sharp	0	3	23	18	C \sharp	5	0	16
7	C	1	0	5	19	C	6	0	9
8	B	1	1	3	20	B	7	0	18
9	A \sharp	1	1	17 $\frac{1}{2}$	21	A \sharp	8	0	10
10	A	1	2	25	22	G \sharp	12	0	12
11	G \sharp	1	3	23	Tenor.	F \sharp	16	3	24
12	G	2	1	9	Angelus.	F	19	3	0

11. DUMBARTON. Municipal Buildings.

In the Municipal Buildings is preserved a bell called locally the Skellat bell. This bell is of very great age, probably belonging to some Celtic saint. The section of the bell is rectangular at the soundbow but the edges have been somewhat flattened. The material is cast bronze and the dimensions¹ are:

At mouth, 8 inches one way and 9 inches the other.

Height to top of the crown, $9\frac{1}{4}$ inches.

Height to top of the metal handle, $11\frac{1}{4}$ inches.

Width of crown along line of handle, $4\frac{1}{4}$ inches.

The bell seems to have come into the possession of the Burgh Authorities during the early years of the seventeenth century. In John Glenn's *History of Dumbarton* it is reported² that "It was customary then, on the death of any friend or near relation, to send the public crier through the town with what was called the skellat bell, or dead bell, to warn the friends and acquaintances of the deceased to his or her funeral."

This bell is illustrated on Pl. XXXIV, 1.

12. HELENSBURGH.³ Old Church.

A tower containing a chime of five bells for the clock. The tenor $40\frac{3}{8}$ inches diameter, in G.

Bell.	Inscription.	Weight.		
		Cwt.	Qrs.	Lb.
Treble.	Border/19(T)29	1	0	11
Second.		1	2	13
Third.	Border/19(T)29	2	0	16
Fourth.		3	3	19
Hour bell.	Border/19(T)29	12	2	9
OMNIA FIANT AD GLORIAM DEI:...../J. A. FLEMING/AND HIS WIFE WILHELMINA/GAVE THESE BELLS/1929/(T)				

¹ *Catalogue of the Glasgow Exhibition, 1911, vol. ii., p. 1098.*

² *Castle and Town of Dumbarton, D. Macleod, p. 119.*

³ *A division of the old parish of Rhu.*

All the bells were cast by Messrs John Taylor & Co., Loughborough. On the three lighter bells the trade-mark takes the form of a T with its lower end opened out into the form of a bell. On the fourth appears the crest of this foundry, as illustrated in the *Church Bells of Berkshire*, Pl. iv. On the tenor is a larger medallion bearing the lettering TAYLOR LOUGH-BOROUGH round the rim with the same crest inside.

The quarter bells are hung dead but the hour bell is hung for ringing, in ball bearings. All of the bells have flat heads.

13. HELENSBURGH. The Episcopal Church of St Michael and All Angels.

A bold western tower containing a chime of eight bells; tenor note F[#] :

<i>Bell.</i>	<i>Inscription.</i>	<i>Weight.</i>		
		<i>Cwt.</i>	<i>Qrs.</i>	<i>Lb.</i>
Treble.	+ TAYLORS + FOUNDERS + LOUGH-BOROUGH + 1930	2	1	10
Second.	[<i>As above.</i>]	2	2	25
Third.	[<i>As above.</i>]	3	3	15
Fourth.	[<i>As above.</i>]	5	2	12
Fifth.	[<i>As above.</i>]	7	0	23
Sixth.	[<i>As above.</i>]	7	3	3
Seventh.	[<i>As above.</i>]	10	2	4
Tenor.	[<i>As above.</i>]	15	1	23

..... 1930/
 THESE CHIMES ARE THE GIFT
 TO/ST. MICHAEL'S AND ALL
 ANGELS' : HELENSBURGH,/OF SIR
 WILLIAM H. RAEBURN, BT./TO
 THE GLORY OF GOD/AND/IN
 LOVING MEMORY OF/HIS WIFE,
 ELLINOR MARTHA, WHO DIED IN
 1915/AND OF HIS CHILDREN/
 DOROTHY (1900)/SAISIE (1917)/
 ERNEST (1922)/AND OF ALFRED,
 WHO FELL IN THE GREAT WAR,
 1916./

(T)

The tenor bears the large medallion as found at the Old Church, Helensburgh, on the hour bell. This medallion bears the inscription TAYLOR LOUGHBOROUGH.

The whole chime was cast at the foundry of Messrs John Taylor & Co., Loughborough, Leicestershire. All the bells have flat heads and are bolted to steel girders. They are struck by a special form of clapper, which is connected by a wire to a keyboard below. The tenor has a separate chiming mechanism for tolling in.

14. KILMARONOCK. St Marnock.

In a closed western turret there hangs one bell, $16\frac{3}{4}$ inches diameter, which has no moulding wires or inscription. The bell was cast with canons, but these are recessed into the wooden headstock and their shape is not visible.

Though the site is ancient, the present church¹ only dates from 1813, and it is probable that the bell is of this date.

15. NEW KILPATRICK. Old Church.

A north-western tower containing one bell, $37\frac{1}{2}$ inches diameter, hung for ringing and inscribed:

IACOBUS WATERS KING A.M./ÆDIS NOVÆ S. PATRICII
MINISTER, A.D. 1885./JOHN C. WILSON & CO FOUNDERS,
GLASGOW./VOCO, "VENITE AD DEI TEMPLUM."

The bell is cast with canons, and is hung with metal fittings and a counter-balance weight.

The parishes of New and Old Kilpatrick were formed out of the larger parish of Kilpatrick in 1649² when a church was first built on this site. Alterations to the building have been made in the years 1807, 1885 and 1909.

16. OLD KILPATRICK. St Patrick.

A western tower containing a chime of eight bells; tenor note F natural, and a small disused bell.

The bells in the chime are cast with flat heads and are hung dead in a steel frame. The disused bell has a handbell-type argent and a metal headstock and wheel; it was the church bell before the chime was presented, and probably dates from 1812 when the present church was built.

¹ *New Statistical Account of Scotland*, vol. vii., p. 217.

² *Ibid.*, vol. viii.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 187

Bell.	Inscription.	Weight.		
		Cwt.	Qrs.	Lb.
Treble.	GILLETT & JOHNSTON FOUNDERS CROYDON 1897	4	2	13
Second.	[<i>The same.</i>]	4	2	21
Third.	[<i>The same.</i>]	5	1	0
Fourth.	[<i>The same.</i>]	6	0	21
Fifth.	[<i>The same.</i>]	7	0	16
Sixth.	[<i>The same.</i>]	8	1	14
Seventh.	[<i>The same.</i>]	9	1	10
Tenor.	GILLETT & JOHNSTON FOUNDERS CROYDON ENGLAND./TO THE GLORY OF GOD/THIS PEAL OF BELLS IS PRESENTED TO THE PARISH CHURCH OF OLD KIL- PATRICK BY/WILLIAM DUNN BLACK OF AUCHENTOSHAN/IN MEMORY OF HIS FATHER ROBERT BLACK OF KELVINHAUGH/AND OF HIS BROTHER JAMES BLACK OF AUCHENTOSHEN./1897.	14	0	23
Disused.	[<i>No inscription.</i>]	18 inches diameter.		

The chime is operated by a mechanical playing apparatus consisting of a barrel with pegs screwed in round the circumference. As the barrel rotates, the pegs come in contact with trip mechanisms which operate a hammer on each bell. There are three barrels provided, which play both hymn tunes and changes.

17. KIRKINTILLOCH. St Mary, Old Church.

A western bellcote containing one bell, $22\frac{1}{4}$ inches diameter, inscribed:

[*Fig. 4*] GERARD · KOSTER · ME FECIT · AMSTELREDAMI · ANNO · 1663 / [*Fig. 16*]

Above and below the inscription appears the border (fig. 12). On the waist is a large medallion of the Arms of the City of Glasgow.

The bell has canons of the usual type, but the outside surface bears the head of an angel in each case with beading at the edges.

The bell is an excellent casting, and is very similar to one preserved in the People's Palace Museum, Glasgow. This latter one hung in the Tolbooth or town steeple in Glasgow, and bears exactly the same inscription and the

Arms of the City of Glasgow, the only difference being that the head (fig. 4) does not appear.

This bell was cast by order of the Town Council of Glasgow and therefore it was appropriate that it should bear the City Arms. The founder may have got confused, and assumed that as Kirkintilloch was so near Glasgow it would do no harm to have the medallion on both bells.

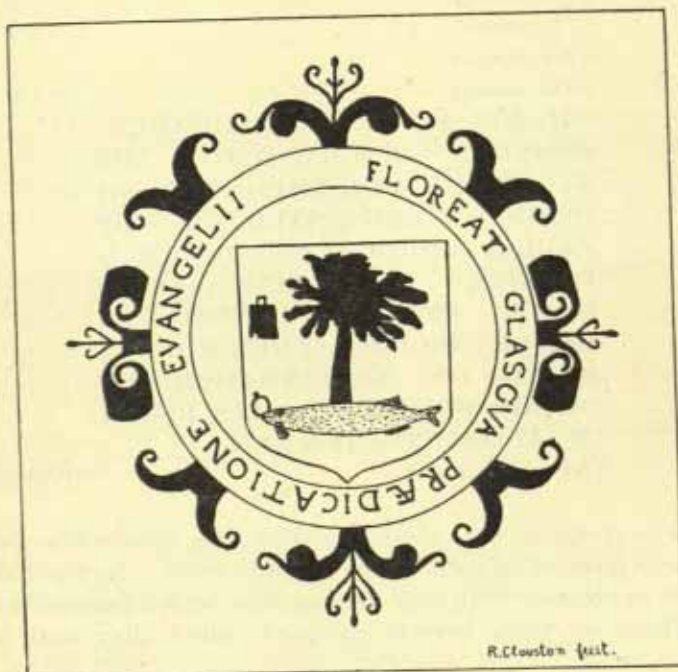


Fig. 16 ($\frac{1}{2}$).

Arms of City of Glasgow, from bell in Old Church of St Mary, Kirkintilloch, cast in 1663.

The church is disused and the bell's fittings are very much decayed; the wheel has almost disappeared, only fragments are left, and the gudgeon pins are rusted in. The bell, however, is in no danger of falling.

The church was built in 1644 after the division of the larger parish into Kirkintilloch and Cumbernauld, or Wester and Easter Lenzie as they used to be called. It became disused when the New Church of St Mary was completed in 1913.

The author's thanks are due to ex-Provost James Fletcher, J.P., F.S.A.Scot., for his assistance in reaching this bell. The ascent was only achieved with the greatest difficulty.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 189

18. KIRKINTILLOCH. St Mary, New Church.

This church possesses a fine tower of large proportions, which contains a chime of thirteen tubular bells. These and their fittings bear no maker's name.

19. KIRKINTILLOCH. St David's Memorial.

A tower with spire containing one bell, 40 inches diameter, hung for ringing, and inscribed:

TO THE GLORY OF GOD/AND IN LOVING MEMORY OF HIS
WIFE ELIZABETH L. GOODWIN. THIS BELL WAS/PRESENTED
BY ARCHIBALD WATSON J.P. CLERK OF SESSION, WITH
HUMBLE ACKNOWLEDGMENT OF GOD'S MERCY DURING A
LONG LIFE./1926./JOHN C. WILSON & CO., LTD FOUNDERS.
GLASGOW.

The bell is hung in ball bearings with metal fittings. It is one of the last bells to be cast by this foundry before it closed down.

20. KIRKINTILLOCH. The Town Steeple.

In the tower with spire hangs one bell, 39½ inches diameter, inscribed:

DAVID BURGESS FOUNDER GLASGOW. No 258
KIRKINTILLOCH TOWN BELL 1849 1247 Lbs

The bell is cast with canons, and there is a border above and below the inscription. The wooden fittings are much dilapidated, the rim of the wheel has entirely gone, and the clapper lies on the clock floor. The bell is thus useless. The clock is in a similar state.

The foundry number of the bell and its weight are both incised on the inscription band. The remaining part of the inscription was stamped in the mould prior to casting and is therefore raised from the surface of the bell.

In 1814 the Town Council¹ appointed a committee to raise funds by public subscription for a steeple, a bell and a new gaol. In 1820 the accounts for the erection of the steeple were presented, but at this stage it does not appear that there was a bell, as in 1825 a Clock and Bell Committee was appointed. In 1829 it was reported that a bell had been placed in the steeple, but unfortunately in 1835 it was cracked and was recast by a Greenock firm of ironfounders, probably James Duff & Sons, at a cost of

¹ *Old Kirkintilloch*, Rt. Hon. Thomas Johnston, P.C., M.P., p. 171.

£22, 2s. This bell is reported ¹ to have weighed 14 cwt. while its predecessor weighed 19 cwt. In 1849 the bell was again cracked, and the present bell, weighing just over 11 cwt., was cast at the Gorbals Foundry, Glasgow.

21. LUSS. St Mackessog.

This church has a small central turret perched on the ridge of the roof. It is near no gable, and as a result the bell rope is brought down along the roof over pulleys. The single bell is almost inaccessible without the aid of long ladders, but when viewed through a telescope it was found to be of the brass foundry type with a handbell-type argent and no moulding wires. There appeared to be no inscription.

The church was rebuilt ² in 1771, but the bell is not as old as this, being nineteenth century, and weighing not more than 2 cwt.

22. RENTON.³ Old Church.

A western tower containing a chime of six bells, which are all inscribed:

1-6) JOHN WARNER & SONS L^{TD} LONDON 1892./PRESENTED
TO RENTON CHURCH/BY JAMES AIKEN AND JOHN BELCH
AIKEN/1892.

The approximate weights are:

<i>Bell.</i>	<i>Cwt.</i>	<i>Qrs.</i>	<i>Lb.</i>	<i>Bell.</i>	<i>Cwt.</i>	<i>Qrs.</i>	<i>Lb.</i>
Treble.	3	1	0	Fourth.	5	0	0
Second.	3	3	0	Fifth.	6	0	0
Third.	4	2	0	Tenor.	7	3	0

The bells are cast with Doncaster-type heads, and are hung dead in a wooden frame. They are chimed by Ellacombe hammers, the bells being struck internally. This church was built in 1892 and is the first on the site.

23. RHU. Old Church.

A lofty tower containing four quarter bells and an hour bell for the clock. These are inscribed:

¹ *New Statistical Account of Scotland*, vol. viii., p. 93.

² *Ibid.*, vol. vii., p. 166.

³ Part of the Old Parish of Dumbarton.

CHURCH BELLS OF RENFREWSHIRE AND DUNBARTONSHIRE. 191

• Bell.	Inscription.	Weight.		
		Cwt.	Qrs.	Lb.
Treble.	JOHN C. WILSON & Co. FOUNDERS GLASGOW. A.D. 1881.	2	1	0 $\frac{1}{2}$
Second.	[<i>The same.</i>]	2	2	0 $\frac{1}{2}$
Third.	[<i>The same.</i>]	3	2	0 $\frac{1}{2}$
Fourth.	THE TOWER CLOCK & QUARTER BELLS WERE IN AFFECTIONATE REMEMBRANCE OF MRS: ANNE LEADBETTER/BY HER CHILDREN —DURING THE MINISTRY OF THE REV: JOHN LAWRIE FOGO. ROW. A.D. 1881./JOHN C. WILSON & Co FOUNDERS. GLASGOW.	5	1	0 $\frac{1}{2}$
Hour bell.	C & G MEARS FOUNDERS LONDON /PRESENTED BY ROBERT NAPIER OF WEST SHANDON ENGINEER GLASGOW/FOR THE USE OF THE NEW PARISH CHURCH ERECTED AT ROW/ANNO DOMINI 1850/ REV ^d JOHN LAURIE FOGO MINISTER.	14	3	5

All the bells are cast with canons and are fitted with clappers. The quarter bells, however, are hung dead on a floor above the hour bell. This latter bell is hung for ringing with metal fittings. Large counterbalance weights are bolted on to both the headstock and the rim of the wheel.

Robert Napier¹ (1791–1876), who gave the hour bell, was a famous marine engineer. He made his first marine engine in 1823, and in 1841 he started building metal ships. He was President of the Institution of Mechanical Engineers in 1863–65.

The parish of Rhu² was formed in 1648 out of parts of the parishes of Cardross and Roseneath. The first church built at this time was demolished in 1763 and a new church was erected. This possessed a very small bell turret complete with a bell. In 1851 the present church was built, and doubtless the old bell was sold on the donation of the present hour bell.

¹ *Dictionary of National Biography.*

² *Annals of Garelochside, W. C. Maughan.*

24. ROSENEATH. Old Church.

In the turret of the present church hangs a bell, about 17 inches diameter, which with the aid of a telescope was found to be inscribed on the waist:

MDE/1892

The bell has normal loop canons and moulding wires on both the inscription band and soundbow.

This bell replaces an older one which is now preserved in the south porch. This bell is $16\frac{1}{2}$ inches diameter, and is inscribed:

SOLI ♦ DEO ♦ GLORIA ♦ IAN ♦ BVRGERHVYS ♦ ME ♦ FECIT ♦ 1610 ♦

Above the inscription appears an ornamental border (fig. 11). The inscription is reproduced in fig. 15, *a*, and Pl. XXXIV, 1, shows a photograph of the bell. There is a false crown staple with a clapper of eighteenth century date.

There has been a church¹ in this village at least since 1199, as in this year the living was granted to the monks of Paisley Abbey. The pre-Reformation church was rebuilt about 1760, but parts of the older building were incorporated in the new church, notably the old bellcote.

This church is now in ruins, and a new church was built on a site nearby in 1853. The old bell of 1610 was transferred to this new building, but was replaced later as it was wearing thin in the soundbow. It is not, however, cracked.

The author's thanks are due to the Minister, Rev. Cameron Dinwoodie, Ph.D., and to Mr J. W. B. Henderson, for photographing the bell.

25. SHANDON.²

A western tower containing one bell, 32 inches diameter, inscribed:

CAST BY JOHN WARNER & SONS LTD LONDON 1888.

This church was founded at the Disruption of the Established Church in 1843 and was rebuilt in 1885. The bell has canons of the rectangular type and is hung for ringing in metal fittings.

¹ *Annals of Garelochside*, W. C. Maughan.

² Part of Rhu parish.

VIII.

THE EXCAVATIONS AT HOWNAM RINGS, ROXBURGHSHIRE,
1948. By C. M. PIGGOTT, F.S.A., F.S.A.Scot.

CONTENTS.

INTRODUCTION:		PAGE
The Circumstances of Excavation		193
The Selection of Hownam Rings		194
The Site before Excavation		196
DESCRIPTION:		
Summary of Results		198
The Excavation Described		200
Phase I. The Palisade Enclosure		200
Phase II. The Wall Fort		202
Area I		202
Area II. The Entrance		203
Area III		203
Phase III. The Rubble Ramparts		204
The Inner Rampart		204
The Inner Ditch and Berm		204
The Second Rampart and Ditch		205
Entrance through Second Rampart		205
The Outer Ramparts		205
Blocking of Phase II Entrance		206
Phase IV A and IV B. Two Huts and Storage Pit		206
Hut I, Area III		206
Storage Pit, Area III		208
Hut II, Area IV		209
THE FINDS		212
DISCUSSION		220
APPENDICES I-IV		223

INTRODUCTION.

The Circumstances of Excavation.

The excavations at Hownam Rings in Roxburghshire¹ were undertaken, in June and July of 1948, on behalf of the Society of Antiquaries of Scotland,

¹ First described and planned in the *Border Magazine*, September 1863, 183-4. "Account of an Ancient Fortlet near Hownam, Roxburghshire: with illustration," by David Milne Home.

by kind permission of H.G. the Duke of Roxburghe, and the tenant farmer, Mr J. Bryce.

The excavation lasted a month, and labour was provided by students who were enabled to attend and to receive some training through grants from the Scottish Universities allotted to the Scottish Field School of

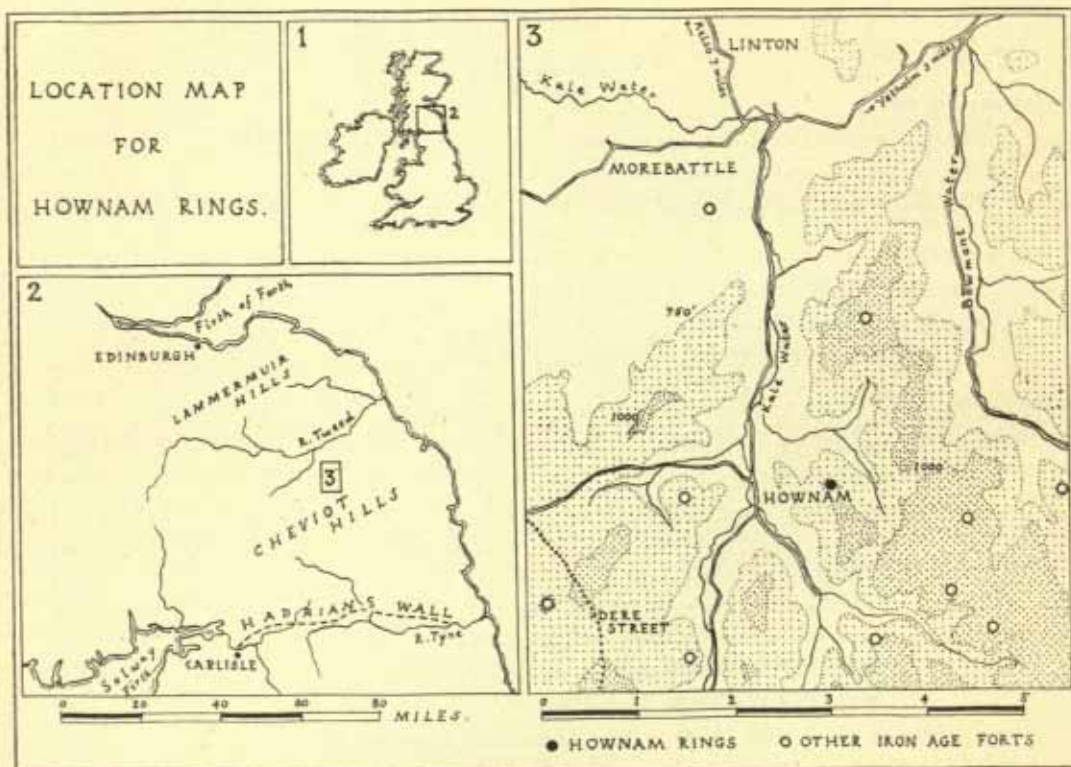


Fig. 1.

Archæology. To these students, to Mr Bryce, and to many other volunteers, notably Miss J. du Plat Taylor, Miss M. Gilmore and Mr H. G. Balfour Paul, the writer is greatly indebted, and not only the writer—for Scottish Archæology has significantly benefited through this voluntary effort undertaken at a time when camping life was extremely difficult, and when the weather was so bad that some 20 per cent. of the digging hours were lost.

The Selection of Hownam Rings.

It has been possible in some parts of Britain, more especially the south, to show that certain kinds of hill-fort defences can be equated with different periods and cultures. Thus single ramparts enclosing a hilltop are in the

south generally found to belong to the Iron Age "A" culture, while multiple ramparts are more typical of the "B" culture. A great deal of excavation remains to be done in all parts of the country before the very significant differences can be worked out, for there were many varied kinds of defences used by the invading or peacefully settling peoples within the Iron Age. And in no part of the British Isles is less known of these defences than in Southern Scotland, where scientific excavation on hill-forts has been almost non-existent. Carefully planned excavation followed up by extensive field-work by trained archaeologists is needed before the numerous local variations among the hill-forts can be classified, and related by associated finds of pottery and metal-work to the cultures of pre- and post-Roman times. For whereas in the more Romanised regions of southern Britain there are comparatively few fortified sites of the Dark Ages, in the north and generally in the highland parts of Britain there are known to be many Dark Ages sites. Of these, too, almost nothing is known and their characteristics have yet to be worked out.

In "A Survey and Policy of Field Research in the Archaeology of Great Britain" (*Council for British Archaeology*, 1948) the following sentences occur (p. 105):—

"Several forts (Traprain Law, Castle Law, Kaimes Hill—all in the Lothians) have been shown by excavation to belong to several periods, each with a distinct system of fortification; and this can sometimes be worked out on the ground without excavation. But without careful fieldwork, description of an unexcavated fort as 'multivallate' or 'bivallate' is simply misleading. Again, the excavation of Kaimes Hill proved that hut-circles within the enclosure were later than the latest system of ramparts, so that references based on superficial surveys to the exposure of such structures within a fort have a very limited value."

Again, on the following page:—

"The very chronological framework for the native cultures north of Hadrian's Wall remains to be built. Hence the prime need is an index-series of type-fossils, based mainly upon stratified pottery. This can only be obtained by further excavation."

As far as field-work is concerned, it is fortunate that at the present time Roxburghshire is being studied intensively by the Royal Commission on Ancient Monuments, and as a result of this work it is possible to distinguish the following types of defended settlements¹:—

- (1) Hilltops enclosed by palisades, either single or double.
- (2) Forts defended by a simple sheer-faced wall.
- (3) Forts with multiple ramparts and ditches.

Apparently later than these are the small enclosures known as "home-

¹ See Steer in *The Archaeological News Letter*, No. 8 (December 1948), pp. 10-11.

steads," and various other presumably post-Roman structures which do not concern us here. Examination on the ground of some of these forts, including Hownam Rings, revealed an apparent sequence in which multiple ramparts seemed to have been added to defences with a single wall. Hownam Rings was clearly a fort which had had a comparatively long life, during which time the defensive system had been altered and redesigned. It also included a small "homestead" partly built over the rampart. For these reasons it was chosen, and also for the fact that it was not far removed from the Roman road of Dere Street, running northwards to Newstead; for along this road would have been carried many Roman wares which may have been traded with the native people, and these Roman objects are invaluable for the evidence of date which they afford.

Of the two generally practised methods of excavation, total stripping of the site, or test excavations by carefully placed cuttings, the second method was that selected for Hownam.

In the course of the excavation it was hoped that some at least of the following questions might be answered:—

- (1) What was the sequence of hill-fort construction in the Border Country?
- (2) To what cultures and dates did the different defences belong?
- (3) Were the multiple ditched-and-ramparted forts made, as in the south, by Iron Age "B" settlers gradually moving northwards like their Iron Age "A" predecessors? Or, if not accompanied by settlement, was it only the fashion that spread as the new weapons of slings and possibly chariots made the old wall defences inadequate?
- (4) How were these cultures affected by the Roman conquest of Southern Scotland?

Answers were obtained to some of these questions, and will be discussed in the later part of this report.

The Site before Excavation.

Hownam Rings lies just within the 1000-foot contour on the northern slopes of the Cheviots, 5 miles south of Morebattle and half a mile east of the village of Hownam, where the Kale Water is joined by the Capehope and Heatherhope Burns (Grid Reference : 36/791194).

The appearance of the country to-day is that of rolling treeless hills with rounded profile, covered with poor grass suitable only for sheep grazing. Hill-forts and homesteads are thickly scattered, usually, as shown in fig. 1, between the 800- and 1100-foot contour lines. Round about Hownam Rings and the greater height of Hownam Law the land is fairly well drained

HOWNAM RINGS

ROXBURGHSHIRE

EXCAVATIONS 1948

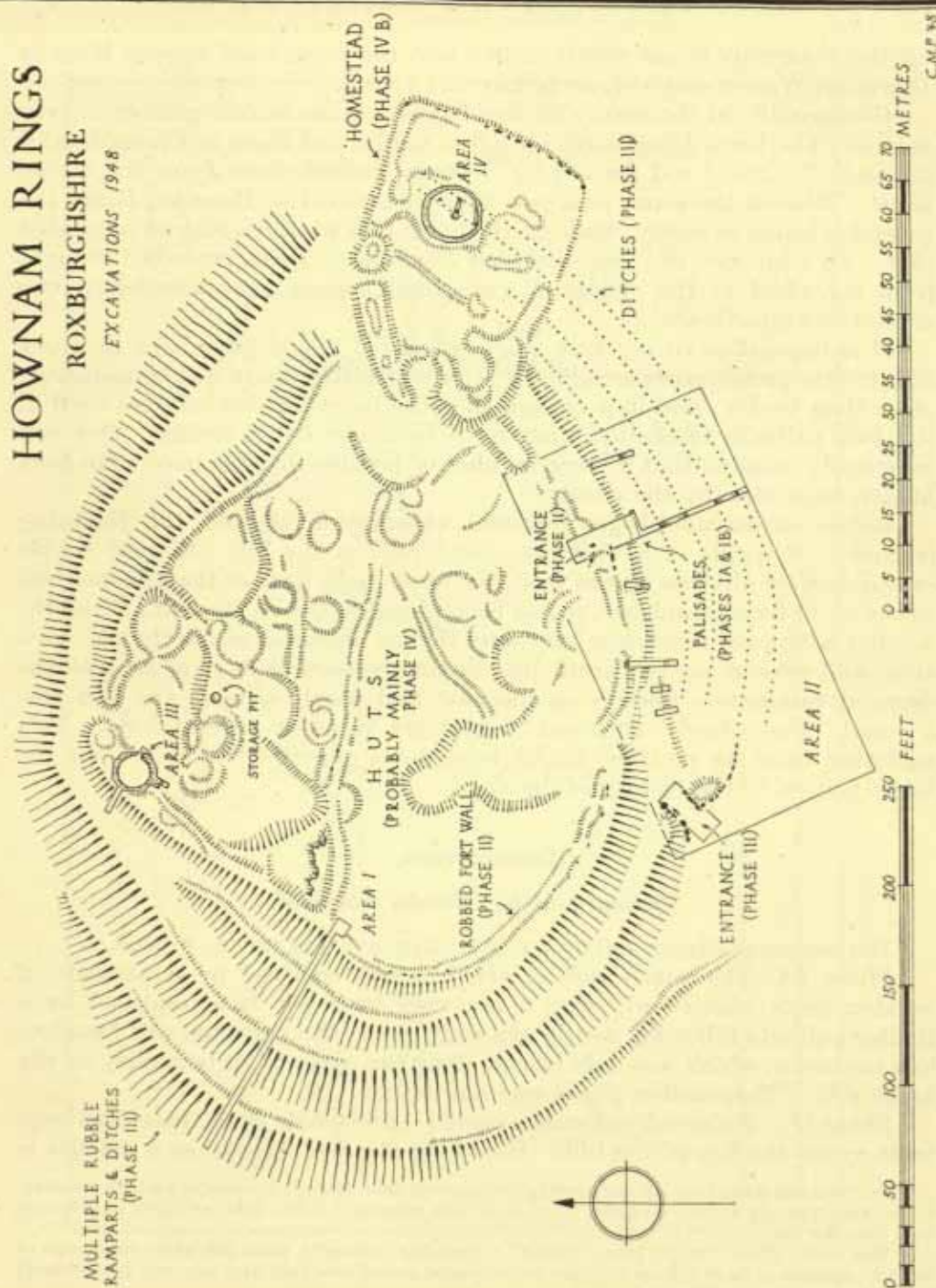


Fig. 2. Plan showing excavated areas.

[Based on a survey by the Royal Commission on Ancient Monuments.

by the numerous burns which empty into the northward flowing Kale or Bowmont Waters and ultimately into the Tweed.

Geologically on the lower Old Red Sandstone the surface geology is very varied. The lower-lying parts are often sandy, and there is a considerable amount of alluvial soil formed by deposits washed down from the higher land. Thus on the south and east sides of the fort of Hownam Rings the subsoil is loamy or sandy, while on the north and west it is rock or indurated clay. In addition, the large number of erratics, some probably brought from far afield in the course of glaciation, include grey amethyst, rock crystal and quartz, etc.

It is impossible to say how much woodland would have been on these hills in late prehistoric times, but it is probable that there was considerably more than to-day, and it is certain that the large number of trees used in the two palisade stockades must have been cut down locally. One can reasonably imagine that a large number of prehistoric sites may have been hidden from view by the woods.

Before excavation began, ground observation showed the following features. Remains of a wall ran round part of the hill. Several rubble ramparts were obvious on the west, the most rocky part of the hill, and had either never been completed, or had been ploughed out on the east and south; circular hollows of numerous huts were thickly clustered inside the defended area, and several on the north had distinctly been built over or into the decayed ramparts. Lastly, on the east and partly outside the fort was a small "homestead" enclosure containing signs of several huts. This enclosure from its position might have been expected to have been the latest feature in the history of the site.¹

DESCRIPTION.

Summary of the Results Obtained.

The sequence discovered as a result of excavation was as follows:—

*Phase I.*² The south side of the hill was enclosed by a palisade of wooden posts which had, after a not very long life, been replaced by a similar palisade following nearly the same line. No entrance was found to this enclosure, which was only traced along the curve of its boundary on the south side. This earliest phase was not dated.

Phase II. A sheer-faced wall, some 10-12 feet wide at the base, had been built round the top of the hill. How long this had existed as a defence is

¹ On the south side of the hill and outside the apparent limit of the fort, a row of some 28 standing-stones, known locally as the "Shearers," may be all that remains of a field dyke, probably considerably later than the fort.

² The word "Phase" rather than "Period" is used here advisedly, since the whole occupation of this fort appears to have belonged to one archaeological period (the Iron Age, pre- and post-Roman) though to four phases within that period.

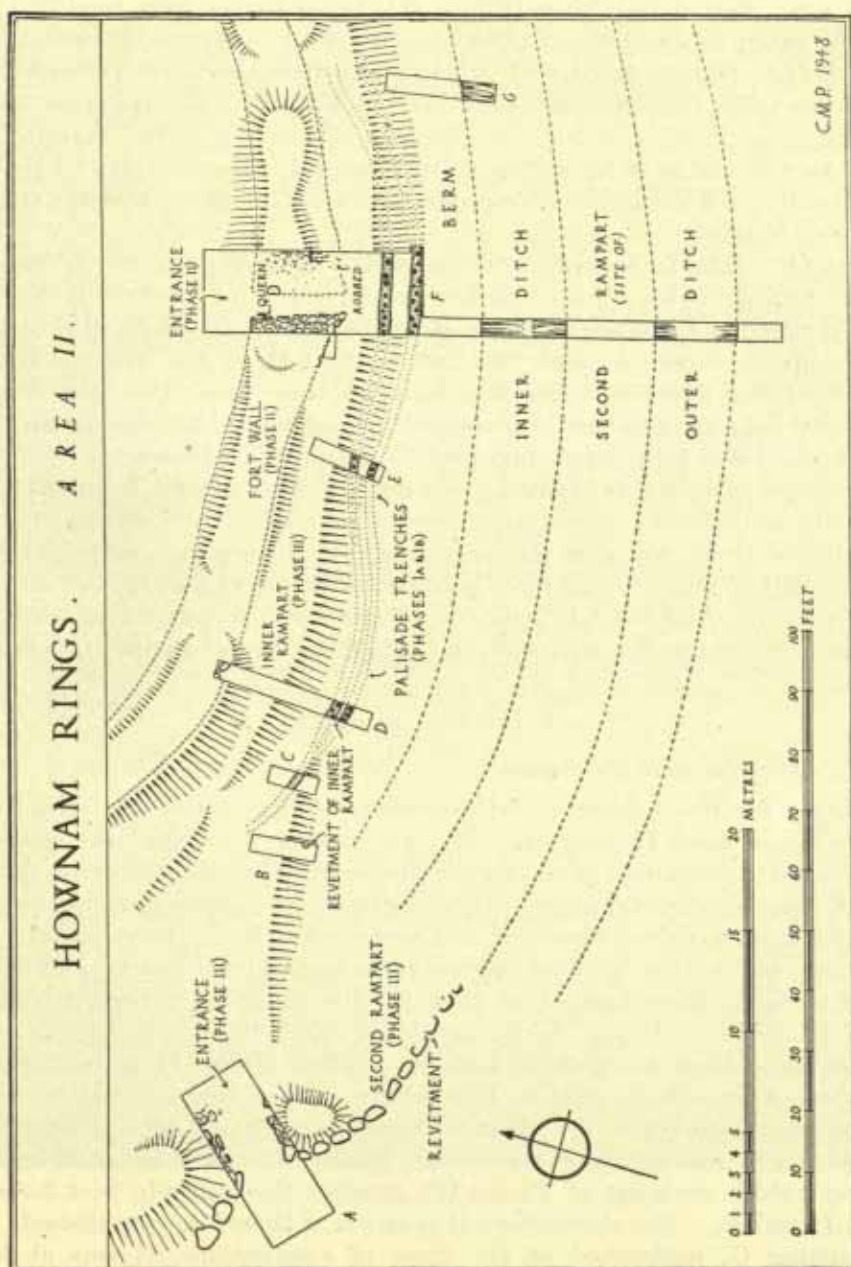


Fig. 3. Plan of Area II.

not at all clear, but it was evidently considered obsolete in the late first century A.D. For at that time (Phase III) the defences were modified, and a datable quern was included in the blocking of the original entrance.

Phase III. This started with the old wall being reduced in height, and some of the large facing-blocks were used as a kerb to the inner of several rubble ramparts; the reduced wall being incorporated in the innermost of these. As was the case in the south of England, this new idea of defence in depth was most probably a response to a new offensive weapon such as the sling or chariot.

Phase IV. The fourth phase began when the defensive life of the fort was at an end, probably by the mid-second century A.D., for there is evidence to suggest that the third phase was of short duration. The hilltop continued to be occupied, however, and the hut excavated on the north-west was apparently being lived in in the late third century A.D. The other hut on the east and belonging to the "homestead" could not be dated so accurately, though it, too, was built over the obsolete ramparts of Phase III.

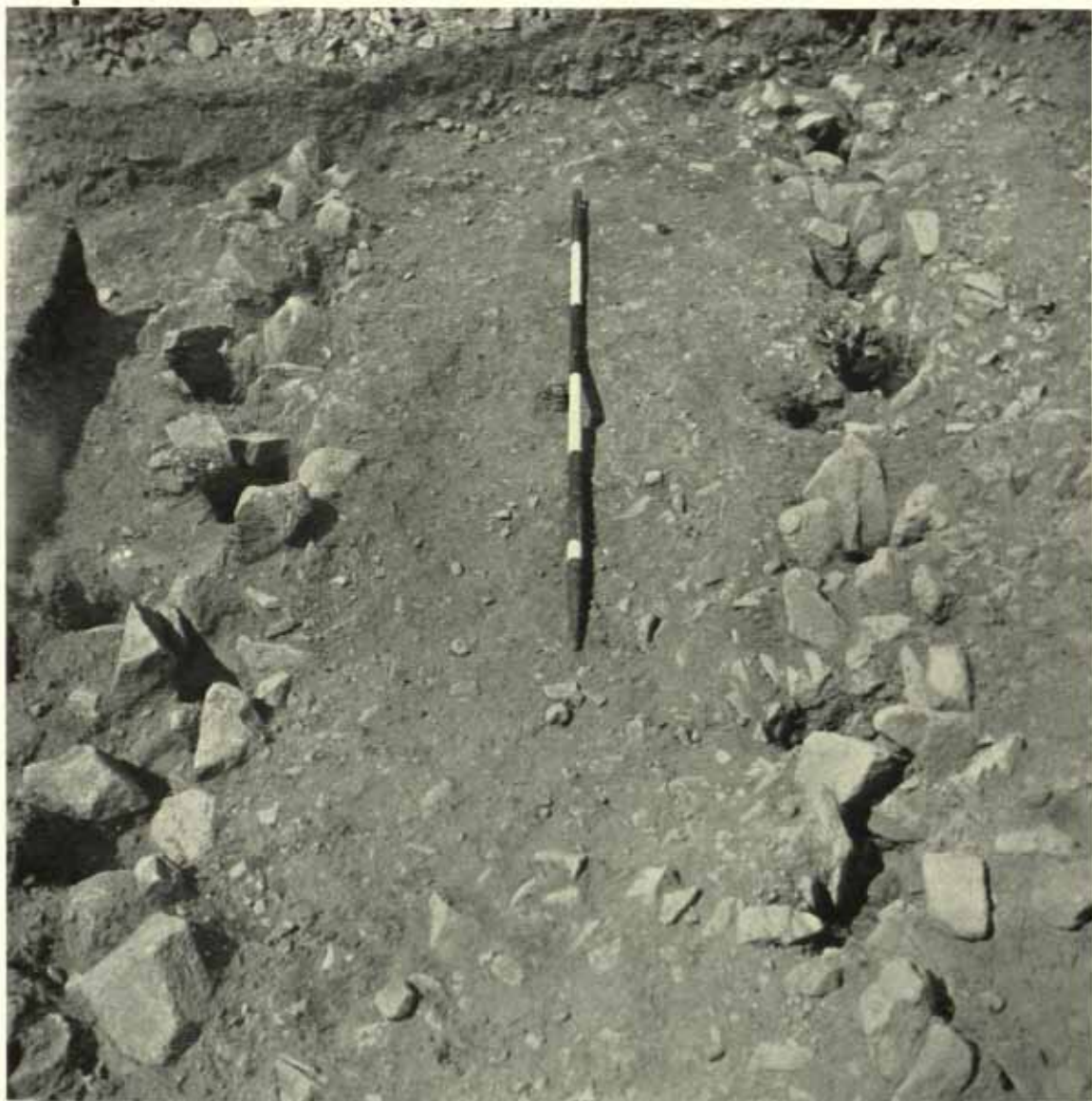
There was no very noteworthy change in the pottery from all these phases, and we have no reason to suppose that during the centuries the hill was inhabited there was any profound cultural change such as might have been expected if large numbers of settlers or invaders had moved in from another region. And even by the end of the third century, and later, the influence of Rome on the material culture of the native people was hardly perceptible.

The Excavation Described.

Phase I. The Palisade Enclosure.

Evidence for the presence of this earliest stage at the site was found accidentally in Area II only (fig. 3). In cutting F, which was designed to strip what apparently was one of the entrances into the wall fort of Phase II, two bedding-trenches, originally holding timber uprights packed round with stones, were discovered and appeared to be contemporary. But as they were subsequently shown to converge (cuttings E and D) and finally join in cutting C, it was apparent that one line must have been a replacement of the other. It has been mentioned that these palisade trenches could not have been co-existent with the wall of Phase II since they ran across the entrance belonging to that phase. They must, then, be either earlier or later than Phase II. But we know from Area I (described below) that Phase III immediately succeeded Phase II. And in addition the innermost rubble rampart of Phase III overlies the palisade post-holes in cuttings D and E. The chronological position is therefore established.

In cutting G, unfinished at the close of excavations, it was at least possible to establish the absence of the palisade trenches in the length uncovered, and it is therefore likely that they began to turn in at this

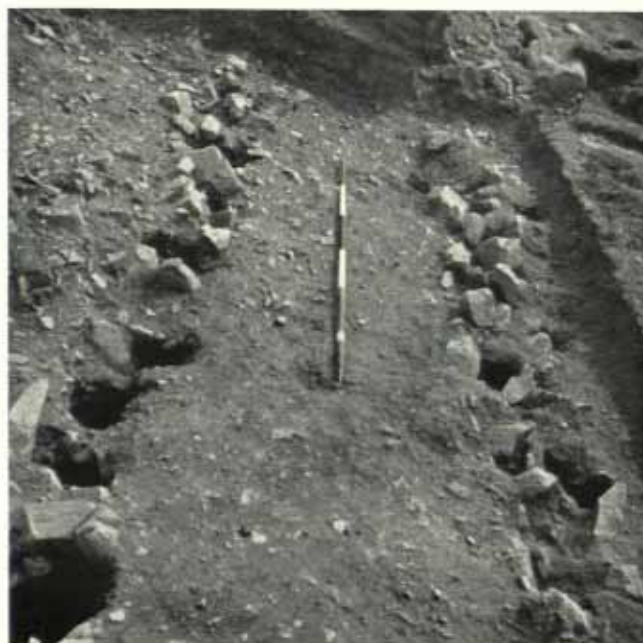


Palisade post-holes of Phase I. (Cutting F.)



(a) Area II cutting D.

In the foreground are the palisades of Phase I; beyond these is the innermost rubble rampart of Phase III piled against the wall of Phase II, the facing stones of which are visible at the end of the cutting.
(See fig. 5.)



(b) The two palisades in Area II.



(a) Wall core of Phase II (Area I) with, on left, the facing blocks thrown down in Phase III.



(b) Phase III rubble ramparts with re-used facing blocks of Phase II, Area I. (See fig. 6.)



(a) Entrance in Wall Fort (Phase II). The two ranging rods mark the palisades.



[Photo: W. de L. Aitchison,

(b) Rampart cutting on west (Area I) from inside the fort.

C. M. PIGGOTT.

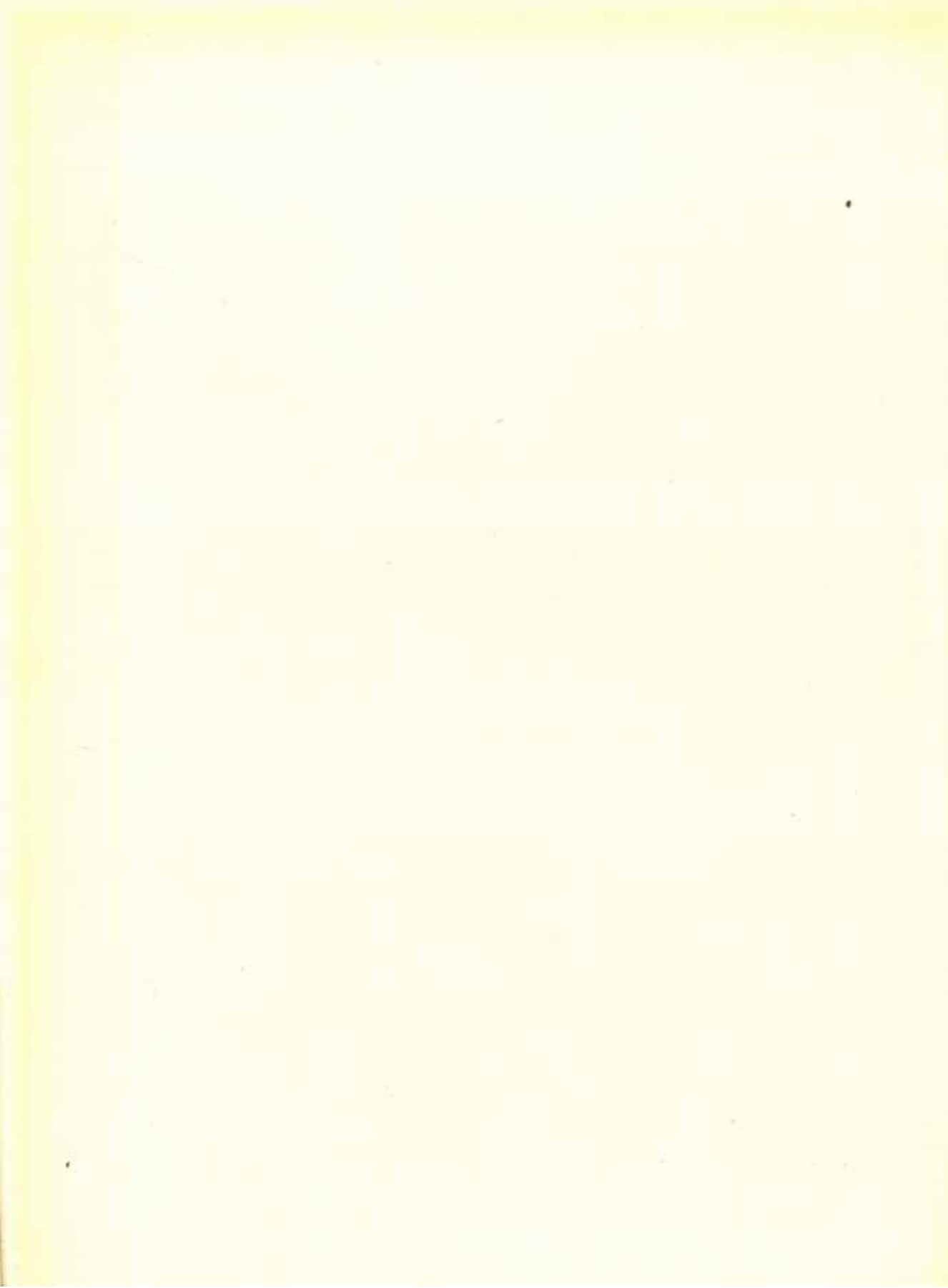


(a) Hut I (Area III).

[Photo: K. A. Steer.



(b) Stone-lined hollow in Hut II (Area IV).



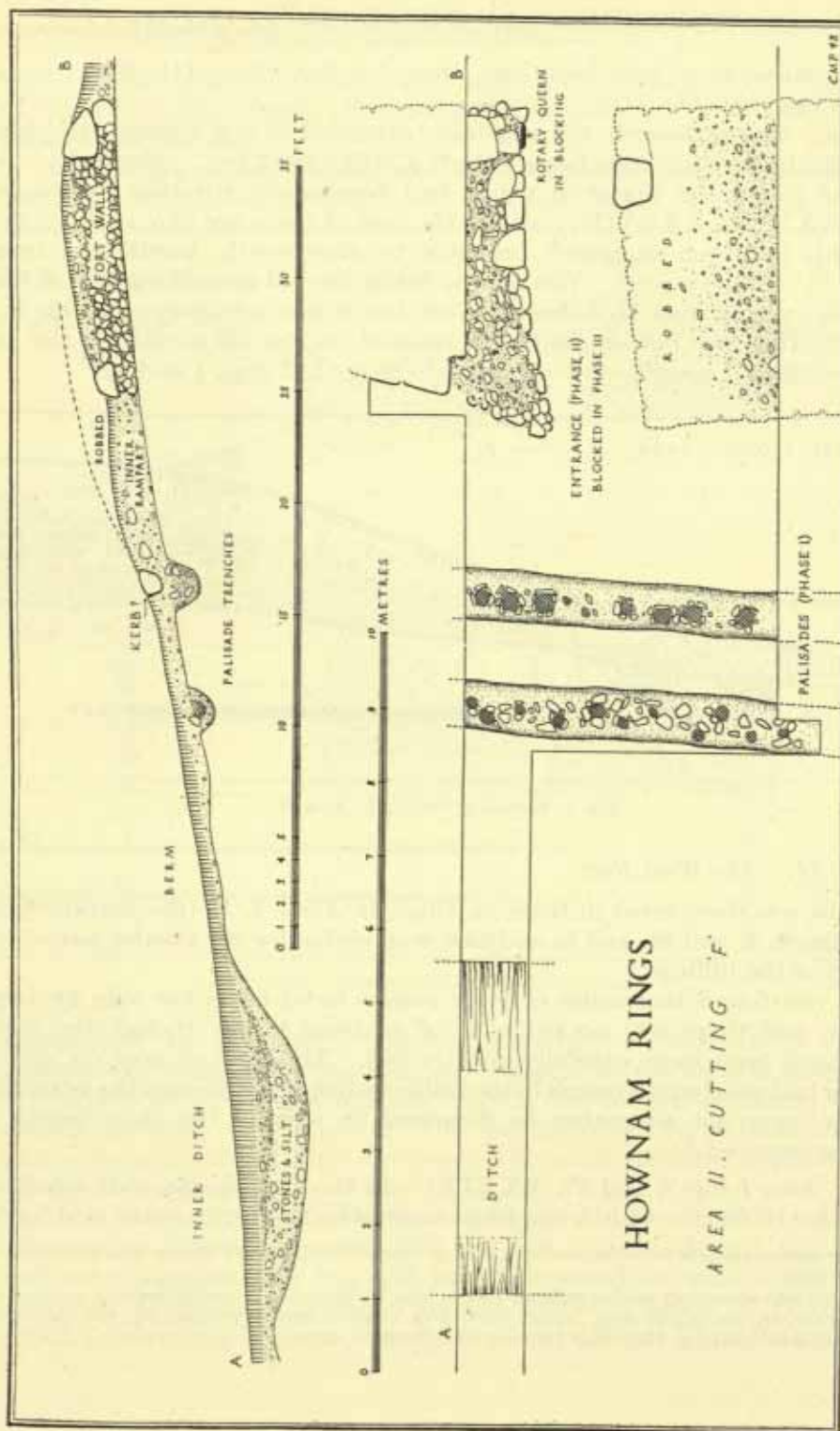


Fig. 4. Plan and section of Cutting F, Area II.

point unless they had been cut away by the Phase III ditch—on the whole less probable.

How far northwards the enclosure extended is not known; the width of both the palisade trenches averaged a little over 2 feet. Stones had been packed round the uprights, which had been about 6 inches in diameter (Pls. XXXVII, XXXVIII); and in the case of the outer line, at least, these uprights had been staggered, probably to allow wattle, hurdling or brushwood to be interwoven. The depths below the old ground surface of these uprights varied from 16 inches to 2 feet, but it was not always possible to be certain when the bottom had been reached, as the old surface of the rock had weathered considerably on this side of the hill (figs. 4 and 5).¹

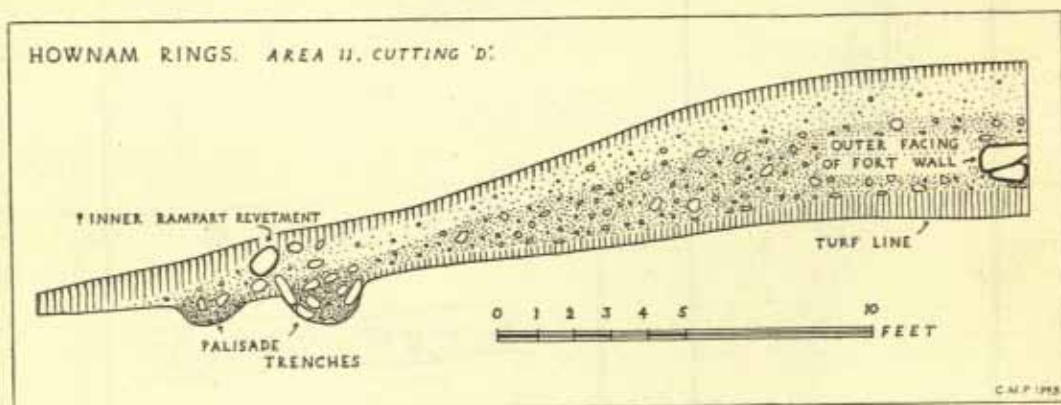


Fig. 5. Section of Cutting D, Area II.

Phase II. The Wall Fort.

This was discovered in three cuttings, in Areas I, II (the entrance) and III (figs. 6, 4, and 8), and in addition was visible for the greater part of the circuit of the hilltop.

It was found to consist of large stones faced on either side by larger blocks, and there was no evidence of coursing inside, though the facing may have been more carefully constructed. This wall showed no signs of having had wooden tie-beams in the Gallic wall manner, though the possibility of this must not altogether be dismissed in view of the short length of walling removed.²

Area I (fig. 6 and Pl. XXXIX).—In this cutting the wall was found to be 10 feet in width, the large facing-blocks on the outer side having

¹ For similar palisade trenches see *P.S.A.S.*, vol. xxxiv. (1900), pp. 117-20, for forts at Orchill, and Kempy, Gask.

² Forts with apparently similar walls are known from Wales, and in several instances a rampart-walk on the inner side can still be seen. (Tre'r Ceiri, *Arch. Camb.* (1926), p. 257, and fig. 20; Caer-y-Twr, Holyhead, *ibid.* (1934), p. 158; Caer Drewyn, *ibid.* (1922), p. 117.)

been thrown down and incorporated in the inner sloping rubble rampart of the succeeding phase. One fragment of pottery was found in the make-up of the wall.

Area II (fig. 4 and Pl. XL, a). *The Entrance*.—This, unfortunately, had been very much robbed on the east side, but a single very heavy

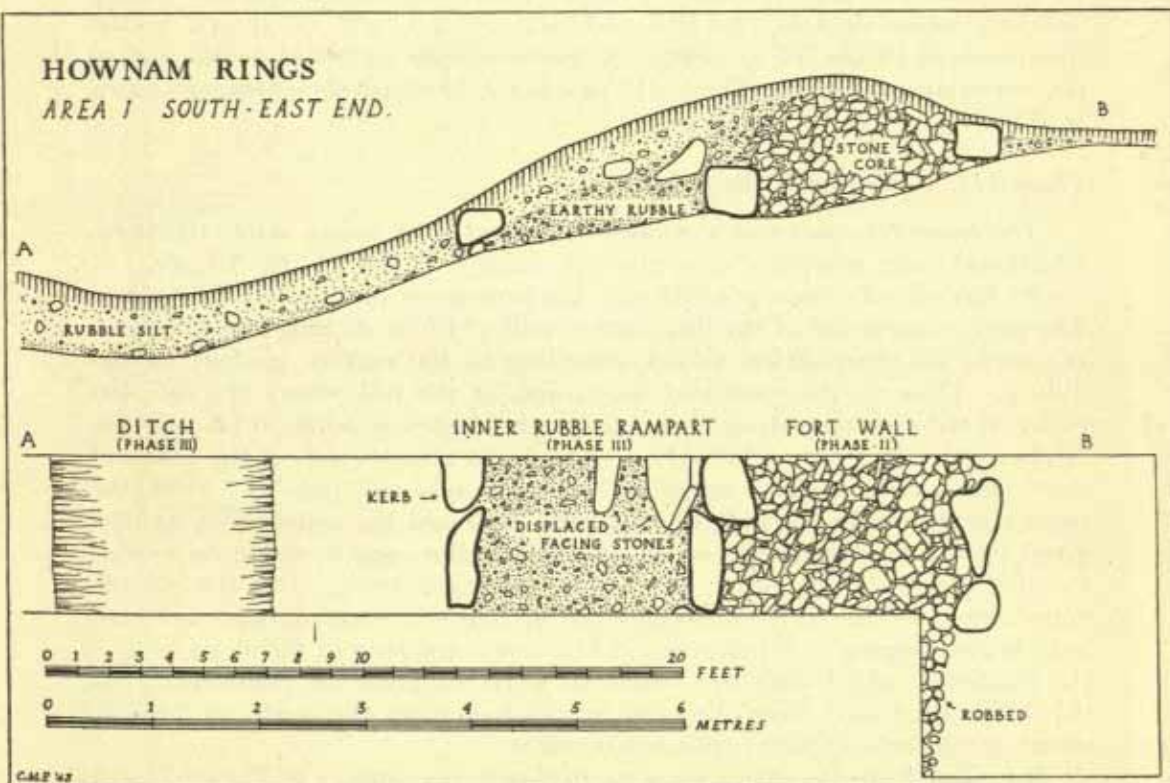


Fig. 8. Plan + section of inner rampart in Area I.

stone, 2 feet by 18 inches in size, and probably too cumbersome for the robbers to remove, had remained, indicating, if we are right in supposing it was still in position, a width of only 4 feet for the entrance, which showed no signs of gate-posts. This entrance may have been a single gap in the wall, closed when necessary with some movable object like a hurdle or brushwood.

Area III (fig. 8).—This cutting was designed to show the chronological relationship between the wall and the hut. As in Area I, the inner and outer kerbstones of the wall were discovered, as well as the lower stones of its make-up, overlaid by the rubble rampart of Phase III, which in turn had been cut into by the hut of Phase IV. Beneath the

wall in this cutting were found several pieces of pottery, a long iron object like a pin, as well as animal bones, slag and charcoal (see pp. 212-13 below).

Just at what time or against whom this wall was built it was not possible to find out, but that it came to an end, was dismantled and the hilltop defences remodelled in the late first century A.D. will be shown in the discussion of Phase III (p. 206). A quern of that date was found among the material used by the Phase III people for blocking the entrance of this wall fort.

Phase III. The Rubble Ramparts.

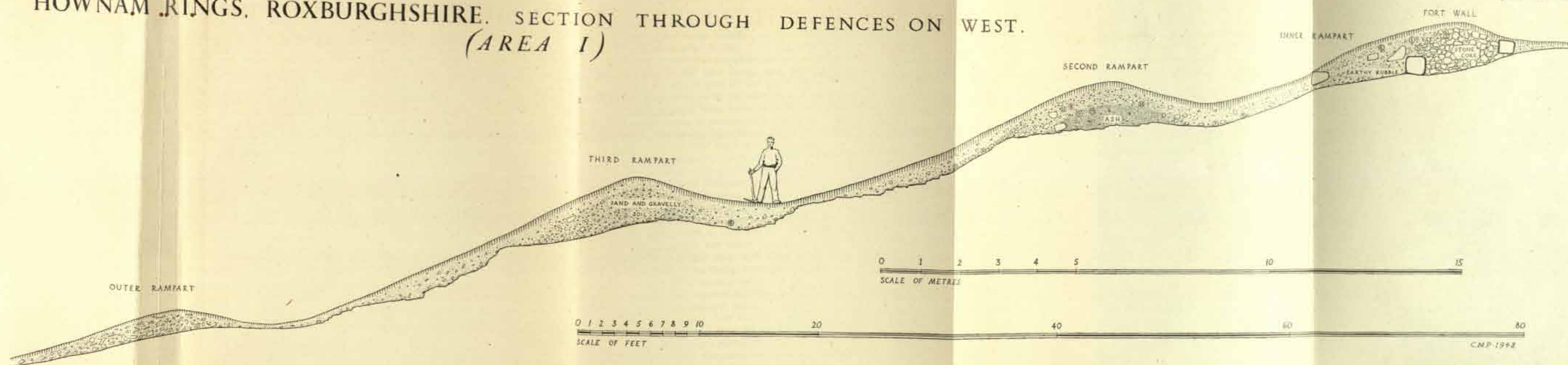
The Inner Rampart was sectioned at a number of points, while the three additional outer ramparts were also cut through in Area I (Pl. XL, b).

As has already been pointed out, the innermost rampart of this period was partly composed of the dismantled wall of Phase II but, like the outer ramparts, its composition varied according to the surface geology of the hilltop. Thus on the west and north-west of the hill, where the soil was rocky, there was more stone than earth in its make-up, while in place of the ditches which had been relatively easy to dig in the soft soils of the east and south sides, only a slight scarping had been achieved (fig. 7). With the more steeply sloping hillside the scarping produced the same effect as that given by the ditches on the other sides of the fort, and it would be unwise to infer that this was either hurried or inefficient work. But the sudden appearance of the different technique of defence construction, reflected both in the digging of ditches and in the clever scarping of the slope to give the maximum effect with the minimum work, suggests the possibility that this work may have been directed by refugees from the south of Britain, where earthworks of this type are abundant.

It is clear from the little apparent change in the pottery of Phases II and III that these rubble ramparts were built by no strangers to the district. The people who dug and scarped the hill to obtain defences in depth may have been immediately descended from those who, we have seen from Phase II, depended more upon stone walls than earthworks for the defence of their possessions. But it seems probable that their labours were *directed* by one or more people who were familiar with the defensive systems of the south. This inner rampart was the only one to have been provided with a kerb, and it was evidently by far the most formidable of them.

The Inner Ditch and Berm.—On the south side of the fort the ditch, from which the earth was obtained for building the inner rampart, was found to be some 16 feet outside it, and the presence of a berm here but not on the steeper slope suggests that there was some advantage in having the berm flat, though its tactical significance is not understood. The ditch was wide

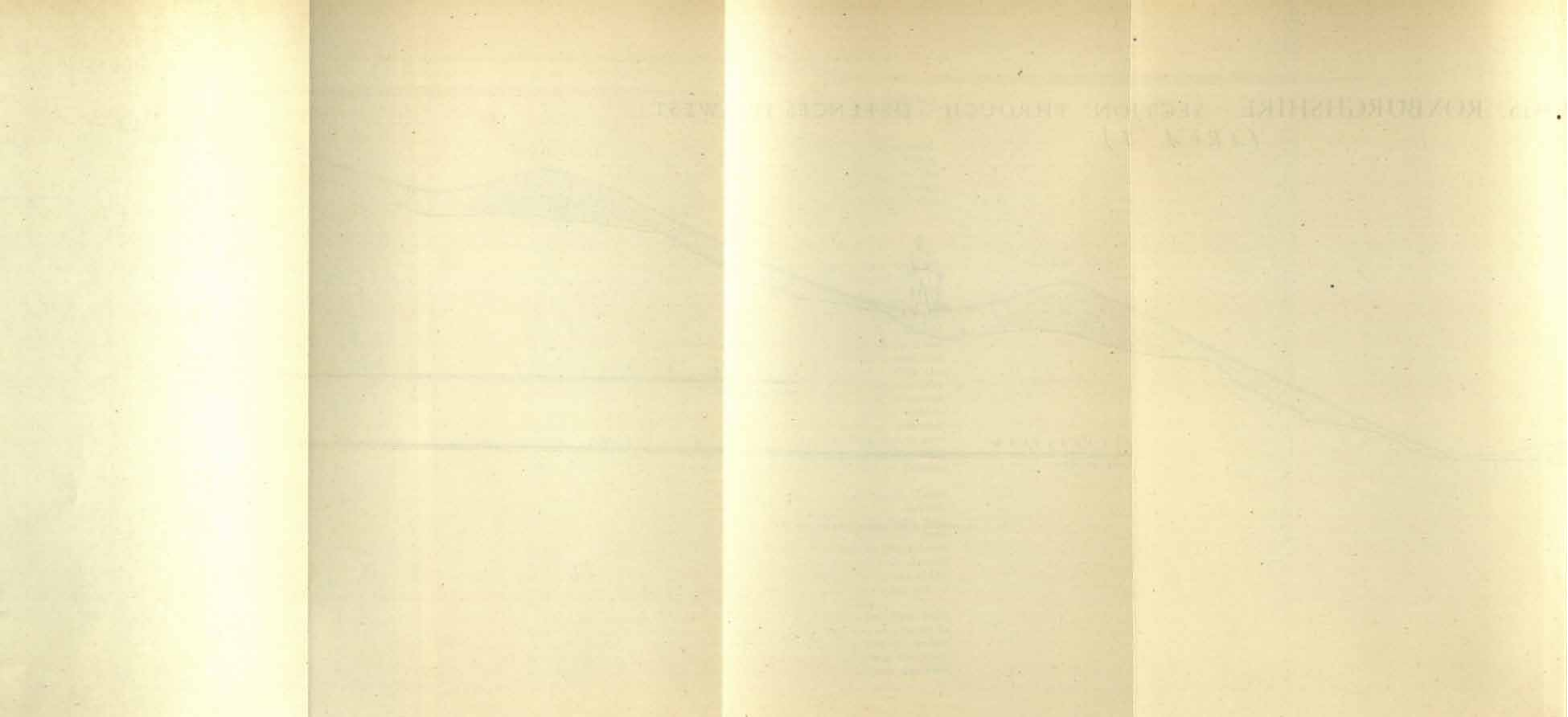
HOWNAM RINGS, ROXBURGHSHIRE. SECTION THROUGH DEFENCES ON WEST. (AREA I)



C. M. PIGGOTT.

Fig. 7. The numbers refer to pottery described on p. 214.

[To face p. 204.]



and shallow and its filling was informative, though it must be remembered that only one cutting was made across it, and it would therefore be unwise to argue too categorically from it. In the section exposed (fig. 4) it was clear that a few large stones, probably from the rampart, had fallen into the ditch soon after it had been dug, and before silt had formed in it. This suggests that the ramparts had scarcely been constructed before they were allowed to fall into decay, and perhaps even more can safely be inferred from the upper part of the ditch filling; for this appeared to be deliberate levelling overlaid by ploughsoil, and the possibility that the builders of the ramparts may have been instructed to level them must be borne in mind. Such a course of events may indeed have been possible politically. For the most convincing hypothesis seems to be that these defences were built at the time of the Agricola Campaign, and it is historically known that relatively peaceful conditions followed the successful advance of the Romans. The entrance through this rampart was not excavated.

The Second Rampart and Ditch.—This rampart was sectioned in Area I, while the corresponding ditch was examined under Hut II in Area IV. The rampart as exposed in Area I was found to consist almost entirely of scraped-up material, and it was evidently considered impracticable to quarry into the native rock to any extent. This dumped material was largely gravelly and stony soil, but there was also a large deposit of ash containing animal bones, and this may well have been debris from a midden or hut-floor belonging to an earlier or contemporary phase of occupation.

The ditch corresponding to this rampart on the east underlay Hut II (fig. 9), and again the filling suggested the deliberate shovelling in of soil rather than natural silting. The hut overlying it may be as early as the second century, but dating evidence for this is unsatisfactory, and one cannot be certain that the ditch of Phase III was filled in so early. Certainly the lack of any appreciable amount of *silt* in either ditch sections exposed suggests that the ramparts were dismantled and possibly ploughed over within a few years of their construction.

The filling of this ditch contained a fragment of sandy red close-grained pottery and fragments of carbonised wood.

The Entrance through the Second Rampart.—This was clearly visible before excavation, for the kerbing-stones of the rampart were showing through the grass. The entrance was stripped (fig. 3), and found to be perfectly simple and 11 feet wide. No post-holes gave evidence of any timber-work. No sign of wear showed in the entrance, though the rotted rock would undoubtedly have quickly formed hollow ruts or a slightly concave surface had wheeled or foot traffic frequently passed through. This lack of wear again supports the view that this phase of the hill defence was a short one.

The Outer Ramparts.—The two outer ramparts which showed at their

greatest height on the west side of the fort, were sectioned in Area I and were found to consist entirely of scraped-up soil varying from stones to sand and gravel according to the nature of the surface geology. As is shown in the section (fig. 7) the ramparts decrease in size from within outwards, and the outermost rampart was found to be hardly 2 feet high.

The Blocking of the Fort Entrance.—The entrance through the fort wall of Phase II was found on examination to have been much robbed and apparently blocked (fig. 4). The blocking was evidently the earlier event, and was presumably done by the rampart builders of Phase III, whose remodelling of the defences has already been referred to, and whose work included the construction of a new entrance farther to the west. With very little soil above the rotted rock it would, but for a fortunate discovery, have been impossible to disentangle the likely sequence of events which took place at the wall fort entrance. But the lower stone of a rotary quern (fig. 11) of late first-century date was found placed in an upright position against the west face of the wall entrance. This important discovery provides a date for the blocking of the entrance and, by inference, for the replacement of the old defensive wall with the new multiple ramparts.

Within and around this area later robbing had destroyed the east face of the entrance, and soil had also been removed from the rubble rampart immediately outside. In the disturbed soil immediately outside the fort wall was discovered, only a few inches below the turf, an iron knife of post-Roman type (fig. 14).

Phase IV A and IV B. Two Huts and a Storage Pit.

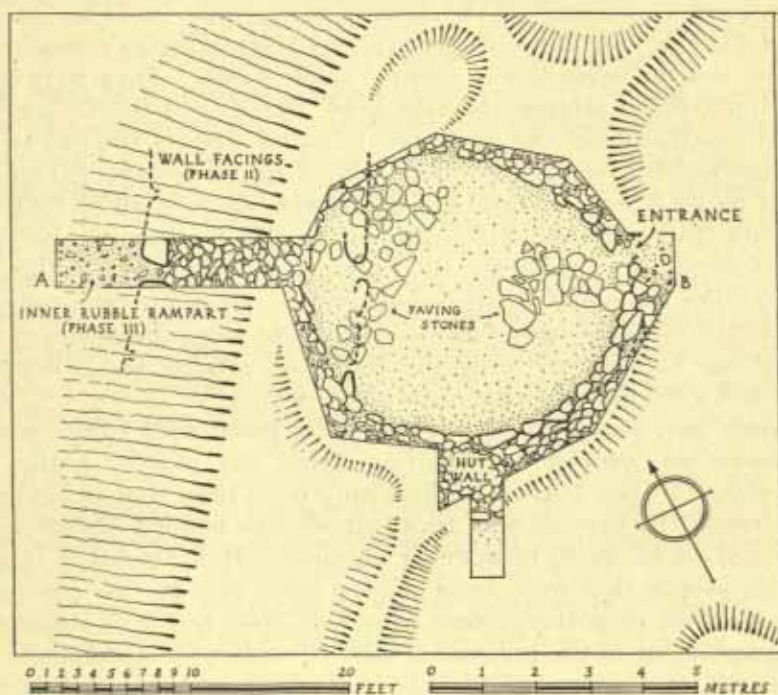
Within Phase IV, all those features of the site known to be subsequent to Phase III are for convenience included, though it is impossible in the present state of knowledge to say whether these two huts and the storage pit are more than broadly contemporary. For whereas Hut I could be fairly accurately dated, the evidence from the homestead, Hut II, was far less conclusive. And the storage pit, too, could only be dated to some time within the Roman period.

Phase IV A, Hut I, Area III. (Pl. XLI, a.)

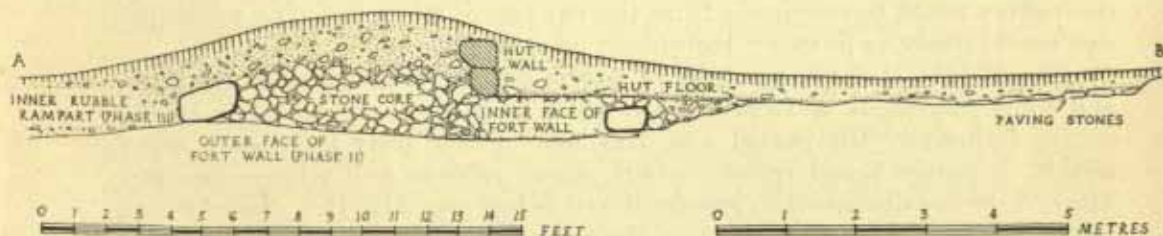
Before excavation it was clear that this hut, which showed as a slight circular hollow, had been partly cut into the ramparts of Phase III, and as a result of excavation a very satisfactory section was obtained, which showed the relation between the hut and two of the previous phases of the fort (fig. 8).

The Entrance was ill-defined and much robbed, and was on the east. It was not possible to ascertain its exact width, since the shallow amount of

HOWNAM RINGS, AREA III. HUT OF PHASE IV A.



PLAN AT LEVEL OF HUT FLOOR.



C.M.R. 43

Fig. 8. Plan and section of Hut I, Area III, showing its relation to the Fort Wall and Rubble Rampart of Phases II and III.

soil overlying the rock at this part of the hill made it impossible to be sure in every case which stones were earthfast and which had tumbled. •

The Walls.—Round the circuit of the hut, which was over 20 feet in diameter, the lower stones of the wall were mostly in position, though a few gaps and irregularities in the side near the entrance point to later robbing, and the removal of many of the paving-stones was probably undertaken at the same time. At no point were the walls standing to a height of more than 3 feet, and the average was slightly under 2 feet. They were composed of heaped-up stones irregularly laid, and mixed with earth and smaller stones. A small cutting was made on the south-west of the hut to find the width of the walling at a point where little disturbance was evident, and it was found to be 5 feet. Time, unfortunately, did not allow further work on this hut: the purpose of its excavation was to discover its date and therefore a *terminus ad quem* for the ramparts of Phase III, rather than to obtain the fuller details of a hut construction. Had this been our purpose, considerable time would have had to be spent in an examination of a length of hut-walling, to discover how the roof was carried and whether there were post-holes set into the thickness of the wall.

The Floor was found to be covered with fallen wall stones and earth, and in places was almost immediately below the modern turf. Paving-stones remained in patches, and others may have been robbed. On the left of the entrance the ground was rock, which was bedded almost vertically and appeared to be quite unworn or chipped. It is therefore improbable that paving-stones had ever been placed upon it. It was interesting to note that no finds of pottery came from this area, and it is suggested that here the inhabitants of the hut laid straw or heather for sleeping on. There was no hearth, and a very slight hole in the rock in the centre of the floor may have held a central post. But this hole had sides which were quite unchipped and it is more probably a natural feature, though it must be remembered that the central upright of the hut, if it had been present, could well have stood on a paving-stone. If this was the method of roofing, the rafters could have sprung from the flat top of the walls, into which the wet would drain as in many Hebridean houses of to-day.

The Finds.—A large quantity of native pottery was found on the floor, and some fragments of Roman ware which have been estimated to belong to approximately the period A.D. 250-300. Other finds included a stone weight, a partly bored spindle whorl, many rubbers and whetstones, etc. These finds are described in greater detail below (pp. 215-17). In addition, just below the turf in the middle of the hut was found a penny of George III and a broken piece of clay pipe, lost perhaps by some shepherd resting in the shelter provided by the hollow of the hut-circle.

The Storage Pit (Area III) (not illustrated).—A number of depressions considerably smaller than those of the huts, and often only about 3 or 4 feet

across, could be seen here and there within the ramparts of Hownam Rings. It was accordingly decided that one of these depressions could be excavated to determine whether or not they represented storage pits of the kind known from the hill-forts and from Iron Age farms of the south, and most fully recorded by Dr Bersu at Little Woodbury, near Salisbury.¹ The result of the excavation was only partially satisfactory. The depression chosen was close to Hut I, and showed up clearly when the surface soil was first removed. But as the excavation continued, it was apparent that the sides of the pit were impossible to recover exactly, since the pit itself had been cut down into made soil, for which there was no obvious explanation. At a depth of only 3 feet the paved floor of the pit was reached, quite carefully laid with paving-stones similar to those used in Hut I. The walls of the pit were then undercut to see whether these paving-stones continued, since it was not impossible that we had merely come down on to an earlier hut floor. But the paving did not continue, and appeared to have been laid specifically for the pit floor. It is clear, therefore, that this pit was intended for storage purposes, and may, like some of the southern examples already referred to, have been lined originally with wicker-work or leather. The pottery was inconclusively dated on its own merits: it was native in type, and it included one base and one rim. These should be dated by the Roman blue glass bead found with them, though that cannot be dated more closely than to the Roman period generally. The filling of the pit was quite homogeneous, a mixture of earth and large and small stones.

Results, though not as conclusive as had been hoped, show that this was probably a storage pit belonging to one of the huts of Phase IV, and may well belong to sometime between approximately A.D. 200-400.

Phase IV B, Hut II, Area IV (fig. 9).

This hut, as can be seen from the main plan of the fort (fig. 2), belonged to the homestead enclosure which had been built after the rubble ramparts had been levelled or ploughed over, at the eastern end of the hill. The hut itself was built over the filled ditch of the second rampart of Phase III, and its section was informative. Somewhat oval in plan, this hut was a little larger than Hut I, and measured 25 feet across inside its longer axis (E.-W.).

The Walls showed up as slight banks entirely grass-grown, and rising to a height of only a very little above the hut floor, though owing to the slope of the land it was in places almost a foot above the ground surface outside. These walls were shown on excavation to have been made of sandy and stony soil—in fact the natural subsoil on this side of the hill. Originally these walls had been faced with blocks of stone, but these had almost all been robbed away, except a row of three contiguous stones on

¹ *Proceedings of the Prehistoric Society*, vol. vi. (1940), p. 30 ff.

the north-east, another on the north, and one on the north-west. Indeed this whole hut had been so seriously robbed that it was difficult to recon-

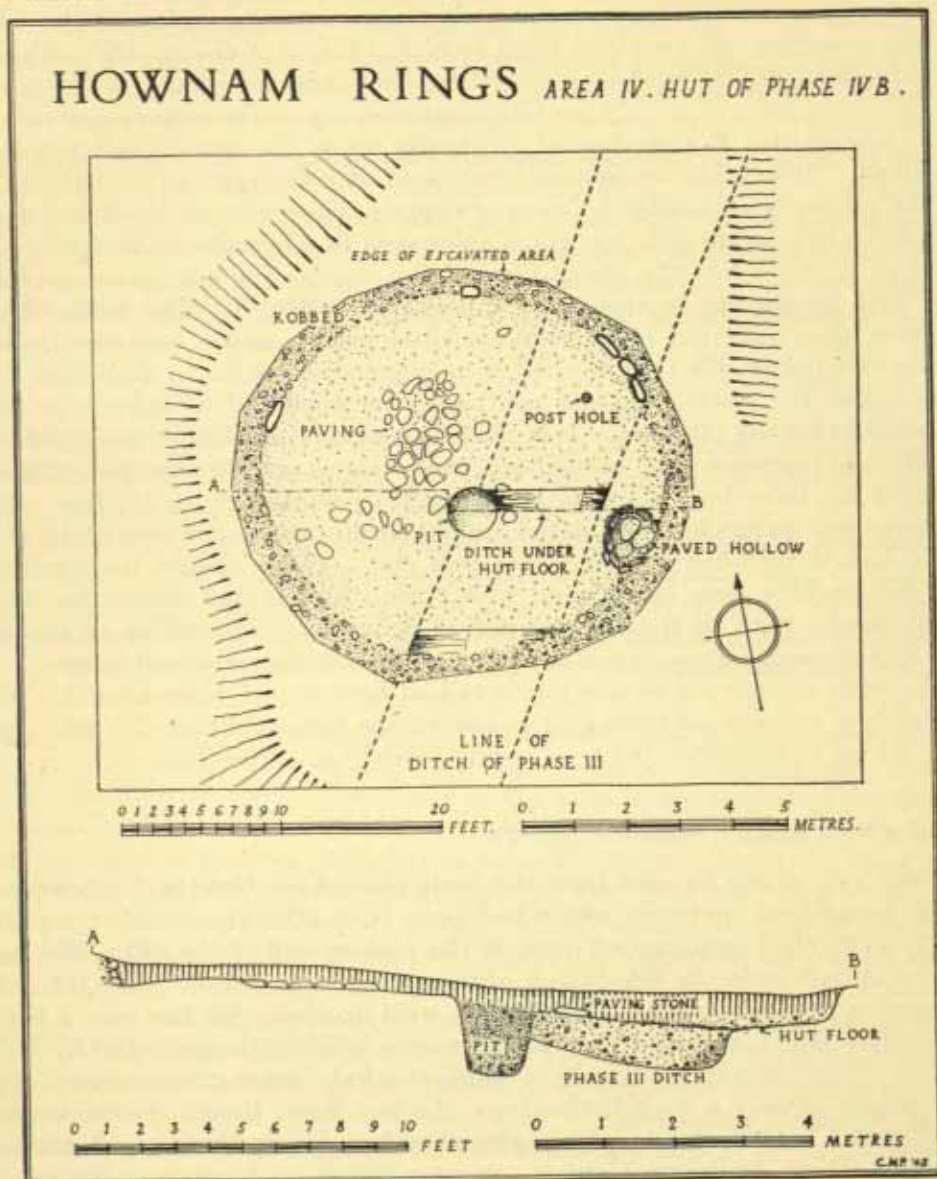


Fig. 9. Plan and section of Hut II, Area IV.

struct its original appearance, nor was it possible to discover any suggestion of its entrance.

The Floor was found to be immediately below the turf on the west and a little over a foot below it on the east. It was sporadically paved, though isolated paving-stones remaining here and there suggest that others may have been removed at the same time as the facing-blocks. Where the floor was not paved it was difficult to distinguish, though its position could be approximately ascertained from the scatter of pottery upon it, and in addition it presented a more compacted surface to the trowel, as might be expected from a well-trodden floor.

Pit and Post-hole.—A large central pit, rather large for a post-hole, was found near the centre of the hut, and partly cut through the filling of the Phase III ditch (fig. 9). This pit, which was 2 feet 6 inches across and a little over 2 feet deep, was filled with fine dark soil and contained a fragment of rim. A post-hole, 7 inches in diameter and over 1 foot deep, was found on the north-east side of the hut floor, sunk into the filling of the underlying ditch. It had compacted sides and contained very fine loose dark soil, with no traces of carbonised wood.

The Paved Hollow.—Inside the hut wall on the south-east was found a carefully made stone-lined hollow with its walls formed of up-ended paving-stones. This hollow (Pl. XLI, b) was filled with loose earth and stones rather darker in colour than the better drained soil overlying the hut floor. This hollow was less than a foot deep, and it contained two fragments of pottery and a long polished stone—probably a whetstone.

The Roof.—As in the case of the first hut to be excavated, there was again no evidence of the method used for roofing the hut. Possibly the central pit may have been intended to carry the main upright to which rafters could be attached. It was unfortunate that the bad weather conditions made further work impossible, and the proper stripping of a length of walling to look for possible post-holes was never completed. A length of three feet was examined on the north-east, but no post-holes were revealed, and they may well, if present at all, have been more widely spaced. In the make-up of the wall at this point was found a Roman bronze nail-cleaner of unspecified date.

The Finds.—A large quantity of native pottery was found on the floor of the hut, and no Roman pottery, though one base showed Roman influence. On the north-eastern sector of the hut floor, just on the lip of that part of it which overlay the filled ditch and would certainly have been once covered by the rampart of Phase III, were some fragments of a yellow and white inlaid glass armlet of a type well known in the early centuries A.D., and almost invariably distributed between the Hadrianic and Antonine Walls.¹ Although found on the hut floor, these armlet fragments cannot be used conclusively for dating the hut, since they may have been either in the

¹ See Kilbride Jones in *P.S.A.S.*, vol. lxxii. (1938), pp. 366-95. The only closely similar armlet to our example came from Traprain Law.

topmost filling of the ditch, or derived from the rampart which had been removed when the hut was built. A few pieces of slag and charcoal (see pp. 224-5) were found on the floor.

The Date of Occupation.—If the armlet belongs to the hut floor, the second century A.D. is the likeliest date of occupation. But if the armlet is derived from an earlier phase, it cannot be more closely datable than to within, or more probably shortly after, the latter part of the Roman period. Evidence is insufficient, and the relative dates of this hut and of Hut I remain undecided.

THE FINDS RELATED TO THE PHASES.

I. Palisade Period.

(a) *Pottery* (fig. 10).—Owing to the shallowness of the soil and the fact that the palisade trenches were overlaid by the inner rampart of Phase III, it was impossible to be certain of the correct chronological horizon of the pottery found near the palisade trenches.

- (1) This piece can definitely be equated with Phase I, since it was fortunately found in the packing of one of the post-holes in Cutting D. It is a plain rounded rim, poorly made and fine grained. Roughly finished inside and out (see fig. 10, I, 1).
- (2) From between the two rows of post-holes and therefore almost certainly of Phase I. This is a large coarse base, evidently belonging to a very large storage jar (fig. 10, I, 2).

(b-g) *Metal, Glass, Animal Bones, Slag, Charcoal, Stone Implements.*—No finds.

II. The Wall Fort.

(a) *Pottery.*—One rim and one base were the only pieces definitely belonging to this phase. Both were hard and well made.

- (1) Base, well made, hard and grey with slight outer bulge (fig. 10, II, 1).
- (2) Unusual squared rim. Hard, close grained. Red exterior. Marks on the top of the rim show that the pot must have had a lid when in use (fig. 10, II, 2).

Both these fragments came from the turf-line under the fort wall in the cutting behind Hut I in Area III. Note that rampart cutting (Area I), No. 2, was also discovered in the fort wall, but not at sufficient depth for it to be undoubtedly of this phase. It may have worked down from the overlying rampart of Phase III.

(b) *Metal*.—Pointed iron object from under fort wall in cutting behind Hut I (fig. 12).

(c) *Glass*.—No finds.

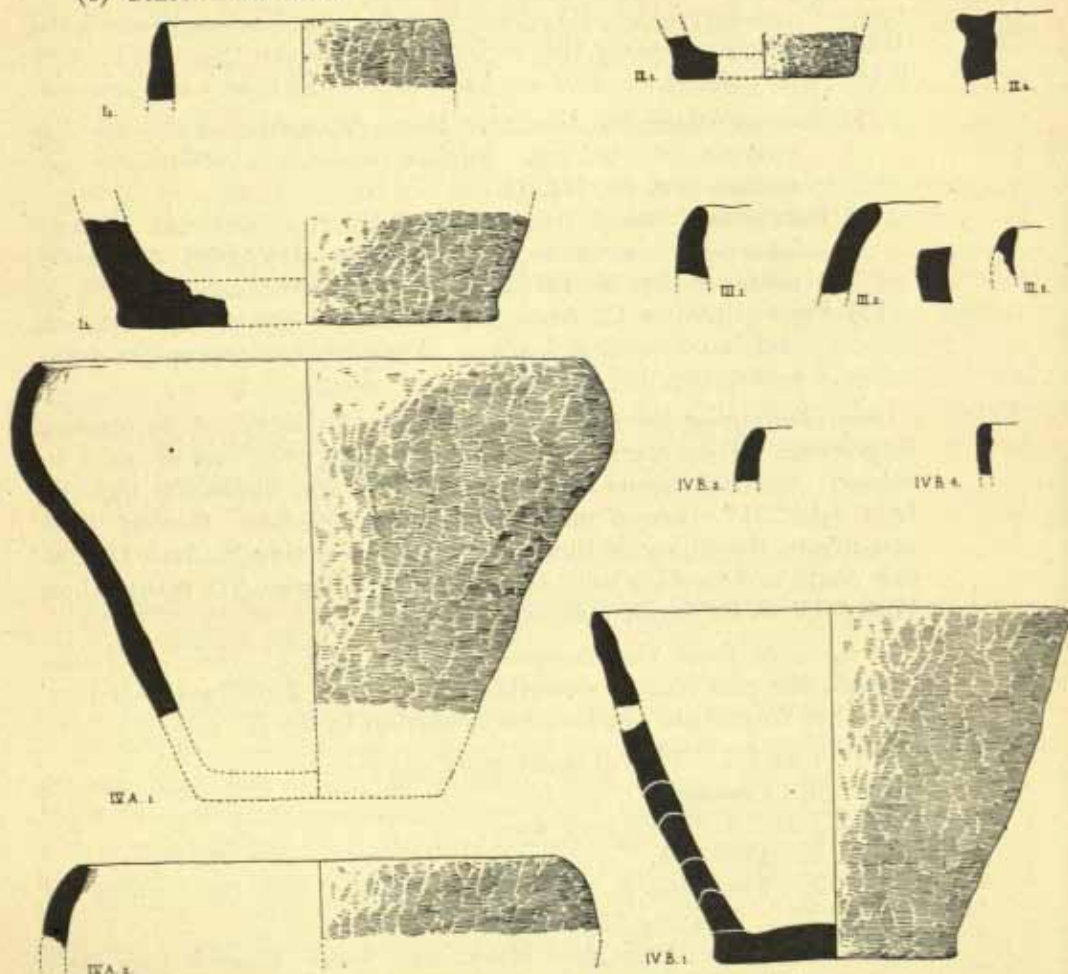


Fig. 10. Pottery from Hownam Rings. (1.)

(d) *Animal Bones*.—Representing ox, pony (size not known) and pig. All from same horizon as the iron object described above. (See Appendix I, p. 223.)

(e) *Slag*.—From same horizon. One piece identified as typical iron slag. (Appendix IV, p. 225.)

(f) *Charcoal*.—From same horizon. Fragments identified as *Birch*. (Appendix II, p. 224.)

(g) *Stone Rubbers, etc.*—None found.

III. *The Multiple Rubble Ramparts.*

(a) *Pottery* (fig. 10).—The pottery was almost all in the make-up of the ramparts and could possibly have been derived from earlier periods. But in nearly all cases this is improbable, since the sherds were found well outside the area enclosed either in Phase I or Phase II.

- (1) From Cutting B, Area II. Rim. Roughly made with fair amount of backing. Surface smoothed. Diameter uncertain (fig. 10, III, 1).
- (2) Rampart Cutting, Area I, No. 14. Rounded rim, slightly inturned. Light red, rather fine clay with smoothed surfaces (fig. 10, III, 2).
- (3) From Cutting C, Area II. Inturned rim. Fine, smooth and hard reddish brown. Associated with coarser fragments (fig. 10, III, 3).

Also belonging to this phase were a quantity of featureless fragments. They are nearly all fine grained, grey, red or black in colour. Several sherds are of fine black ware, somewhat like the Iron Age "B" ware of many South English sites. One of these came from the filling of the inner ditch in Cutting F, Area II, but this could not be definitely associated with Period III rather than Period IV as its depth was only 18 inches.

Fragments from the Rampart Cutting (R.C.), Area I.—These exclude the rim No. 14 described as No. III, 2. The position of the other fragments can be seen in section in fig. 7.

R.C. 1 and 2. Fine grained, grey and red.

R.C. 3. Coarser.

R.C. 4 and 6. Fine grey ware.

R.C. 5. Fine red.

R.C. 7. Fine black, like the fragment from the ditch in Cutting F, Area II.

R.C. 8 and 9. Very fine black, like South English Iron Age "B" ware.

R.C. 10 and 11, 12 and 13. Thick, light red. Well made.

Very few of these fragments were as coarse either as the pottery associated with Phase I or Phase IV, but it is closely similar to that from Phase II.

(b) *Metal*.—None. (George III penny as a stray find.)

(c) *Glass*.—None.

(d) *Animal Bones*.—Mostly from rampart cutting, Area I, in the ashy material largely comprising the second rampart. The animals

- represented include sheep or goat, ox, possibly red deer, and a pony of 12-13 hands. (Appendix I, p. 223.)
- (e) *Slag*.—Fragments from Cutting B, Area II. (Appendix IV, p. 225.)
 - (f) *Charcoal*.—Fragments identified as *Hazel* and *Birch* from Cuttings D and E in Area II and rampart cutting, Area I.
 - (g) *Stone Implements, etc.*—From Cutting B, Area II, came a stray Neolithic axe, for the details of which see Appendix III, p. 224, and fig. 11, No. 5.
 - (h) *Quern* (fig. 11).—In the blocking of the entrance to the Fort, Phase II, on the south side of the hill, was found the lower stone of a rotary quern. This had been carefully placed in an upright position near the inner side of the entrance on the west. This quernstone belongs to a type with gently sloping grinding surface—not uncommon but not frequently described from dated sites. Similar examples were found to belong to the first half of the first century A.D. at Maiden Castle, and it is likely that a slightly later date, say in the second half of the first century A.D., should be ascribed to it in the north.

Period IV A and B. Huts I and II, and Storage Pit.

- (a) *Pottery* (fig. 10).—This includes pottery from the two huts and the storage pit.

Hut I was dated to the latter third century A.D. by the Roman pottery associated with the native fragments found on the hut floor.

Hut II is more difficult to place chronologically. One imitation Roman pottery base was found, no other Roman ware. The pottery certainly might, from its similarity to that from Hut I, be approximately contemporary with it, but one other pot (fig. 10, bottom right) was made of ware which was quite unlike anything else from any phase of the site. The possibility cannot be quite ruled out that this hut, placed as it was in its somewhat angular enclosure, may belong to a post-Roman occupation of the hill. It is impossible in the present state of our knowledge to tell, but the presence of a knife of Dark Ages type found in the robbed entrance of Phase II in Cutting F, Area II, shows that people were living in the neighbourhood at this time. For the discussion of this knife see p. 219 below.

IV A. Hut I, Area III.

Native Pottery.—Several pounds weight of roughly made thick pottery came from this hut floor. On the whole, it is more gritty and coarse than that from Hut II, though much is the same. There are fragments of several pots with inturned rims and flat bases.

- (1) Large pot with inturned rim, wavy sides and roughly smoothed surfaces. Restored in fig. 10, IV A, 1. This pot is especially interesting, since it is clearly similar to an unpublished pot discovered by Mr A. H. A. Hogg at Ingram Hill in Northumberland.

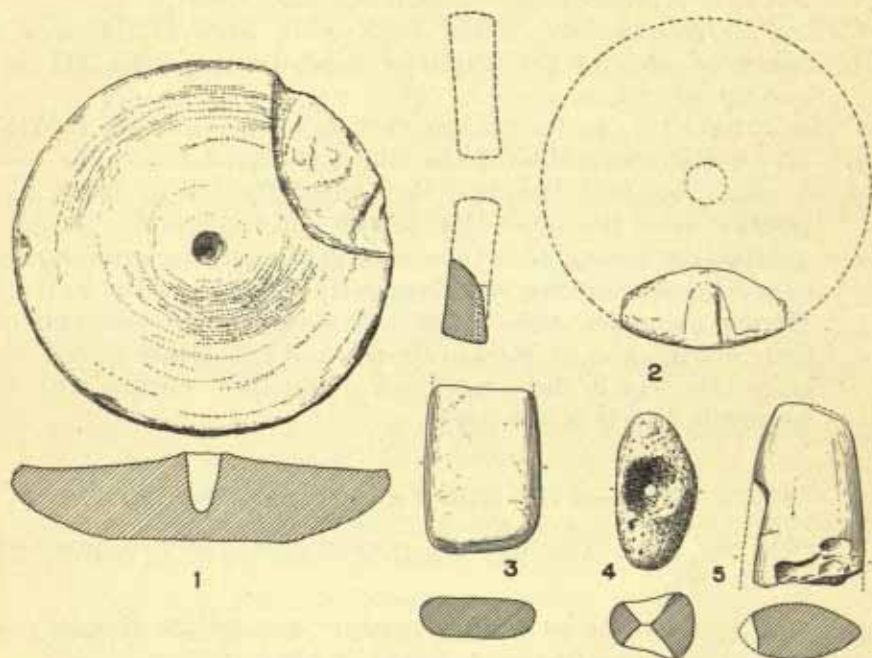


Fig. 11. 1. Quern from blocking of Wall Fort entrance in Area II ($\frac{1}{2}$); 2. Quern from Hut I ($\frac{1}{2}$); 3. Stone polisher from Hut II ($\frac{1}{2}$); 4. Stone weight from Hut I ($\frac{1}{2}$); 5. Stone axe from Cutting B, Area II ($\frac{1}{2}$).

- (2) Similar. Rim only. Light brown, smoothed more carefully on the outside. There are several rims of this kind, as well as flat bases, much abraded and fragmentary, and some of these may belong to the pot, No. 1, as above (fig. 10, IV A, 2).

Roman Pottery.—The remarks on this pottery were kindly made by Mr John Gillam, to whom I am most grateful. Mr Eric Birley also examined the Roman ware and independently came to the same conclusions as Mr Gillam. None of the pottery is illustrated owing to its very fragmentary nature. Mr Gillam's report runs as follows:

- “(3) Rim fragment of Samian ware, beaded, but from the angle it seems to represent Dragendorf Form 31 rather than 18 or 37. Hard, glassy orange glaze. Probably E. or C. Gaulish.
(4) Small piece of black fumed ware cooking-pot; wall fragment with

cross hatching. The piece is hard finished, but the marks of a thumb or finger drawn across presumably horizontally must serve instead of wheel marks to distinguish the way up of the piece. The cross hatching is then found to be obtuse angled. The treatment of the unburnished part of the side is difficult to describe, but it reminds me more of the Constantian than of the Antonine cooking-pots.

- (5) Minute portion of rim, burnished inside and out, of a black fumed ware cooking-pot. It has a widely outspread rim. (Cf. *Birdoswald*, 19 C.)

There were eight other featureless pieces of Roman pottery.

Only two vessels are useful for dating: (a) The black fumed cooking-pot represented by nine or ten fragments. On fabric this is *either* Had./Ant. or Constantian. It is not pre-Hadrian. I regard it as Constantian for reasons given. (b) The Samian scrap. (Late second century?)."

As it seems improbable that this hut was occupied for more than fifty years or so, and as it is probable that all the pottery should belong together, the most likely date for its occupation would be approximately A.D. 250-300. The cooking-pot, No. 4 above, certainly cannot be considered as a later stray since there are many fragments of it. Almost equally unlikely would it be that the Samian sherd is a stray since it is very little abraded. But Samian sherds of this kind could have lasted till the mid-third century. It is for this reason that the approximate dates A.D. 250-300 are suggested for the occupation of Hut I—and the occupation may have extended a little into the fourth century.

(b-e) *Metal, Glass, Animal Bones, Slag*.—No finds.

(f) *Charcoal*.—From floor of Hut I. All *Hazel* (see p. 224).

(g) *Stone Implements*.—There were a number of stone rubbers and whetstones from this hut, and in addition, a weight made of stone and with hour-glass boring was found (No. 4), and what appears to be an unfinished spindle-whorl. This is carefully made, flat and circular, but the boring has never been completed (fig. 12). The "weight," if such it can be called, could hardly have been heavy enough to be effective for any outdoor purpose, such as weighing down a net over a thatched roof, and it is more probable that it was a loom weight. A fragment of rotary quern (fig. 11, No. 2) was found on the floor of the hut. This is a type found in the brochs, and examples are known from Lamaness, Sanday. These should not be far removed in date from this Hownam example, known to belong to the late third or early fourth century A.D.

The Storage Pit, Area III.

The only finds from this pit were the blue glass bead (fig. 13) and six or seven fragments of pottery, well made, hard and grey. Amongst these were one large base and a wide rounded rim, not illustrated.

Period IV B. Hut II, Area IV.

- (a) *Pottery*.—Unlike the homogeneous collection of potsherds from Hut I, we find that the sherds from Hut II are much more mixed, and on archaeological grounds they cannot be regarded as a closed group. For not only was the floor of this hut built over the filled-up ditch of Phase III, but the rampart of that phase must also have been levelled before its construction. Thus all the finds from this area must belong either to Phase III or Phase IV, and it is quite impossible with so little topsoil to fix the correct date of any individual find. It has been mentioned before that the native pottery from this floor was mostly very similar to that from Hut I, though perhaps on the whole rather finer. If this pottery is not derived from Phase III, it would seem probable that the life of the hut overlapped, at least in part, with that of Hut I.

- (1) One pot (fig. 10, IV B, 1) was significantly different from the rest. Not only was it much finer made, and sandier, with no gritty backing, but its walls were built up in the coil method as shown. This pot, like the George III penny and clay pipe from the floor of Hut I, might represent later squatters on the site, but it may represent the only undriven pottery—broken in fact during the occupation of the site. May it be post-Roman? Only similar discoveries or more excavation will prove whether this small, somewhat angular steading, whose position so ignores the ramparts of the fort, really may belong to the fifth to sixth centuries A.D.
- (2) Incurved rim (fig. 10, IV B, 2), probably the diameter was about 6 inches. This may represent, with other fragments, pots of the same profile as the restored pot (No. IV A, 1) from Hut I. There were four fragments of this pot and the angle is not quite definite. Two base fragments may belong to this pot.

These, like many other fragments from Hut II, are more like the ware from the ramparts of Phase III, and may well be derived from that period.

- (3) Small base about 2 inches across. Roughly made of light

brown ware with black surface—still remaining in patches on the inside. This is clearly a native copy of a Roman jar.

- (4) From pit in hut floor. Dark, close-grained rim with slight internal ledge.

From Paved Hollow in Hut Floor.—One fragment grey ware, and one very hard-fired sandy, orange ware with pounded stone backing. Several fragments closely resembling these sherds were found in and under the Phase III rampart in Cutting C, Area II.

Roman Pottery.—None. Native imitation, see No. 3 above.

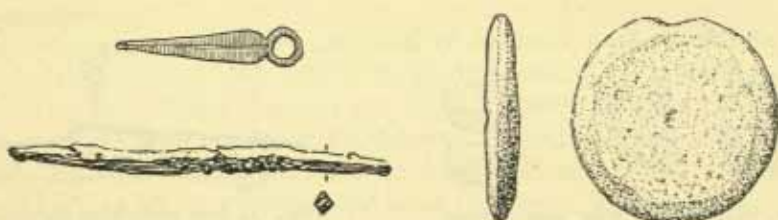


Fig. 12. Above, Roman bronze nail-cleaner from Hut II; below, iron object from under Fort Wall in Area III; unfinished whorl from Hut I. (All $\frac{1}{2}$.)

- (b) *Metal.*—Roman nail-cleaner of bronze (fig. 12). Uncertain date (*cf.* that from Rotherley (Pitt-Rivers, *Excav. Cranborne Chase*, vol. ii, p. 128) and comment by Wheeler, *Lydney Report*, p. 84). This was found built into the wall of the hut and is therefore earlier than it.
- (e) *Glass.*—Fragments of amber-coloured, translucent armlet with white wavy inlay (fig. 13). Found over the ditch filling the position of this find is archaeologically ambiguous. It belongs to a well-known type belonging to the early centuries of the Roman era, and it is further discussed on p. 211.
- (d) *Animal Bones.*—None discovered.
- (e) *Slag* (Appendix IV).
- (f) *Charcoal*, representing birch and hazel.—From floor of hut (p. 224).
- (g) *Stone Implements, etc.*—Several stones showing signs of wear or use as polishers. One of these (fig. 11, No. 3) was found in the paved hollow in the hut floor.

Iron Knife from Robbing of Gateway of Phase II.—The iron knife (fig. 14) from the disturbed soil outside the wall fort entrance in cutting F is of a distinctive type with a shoulder at the junction of the tang with the blade. Knives of this type do not seem characteristic of the North British Early Iron Age, but they do however appear consistently in post-Roman contexts in Scotland, notably at Dunadd (*Proc. Soc. Ant. Scot.*, vol. lxiv (1929–30), p. 118) and

Buston Crannog (Munro, *Anc. Scot. Lake-Dwellings* (1882), pp. 222-23); in Northern England at for instance Grassington, W. R. Yorks (*Yorks. Arch. Journ.*, vol. xxxiii (1937), p. 170); and in Ireland in a whole series of sites ranging in date from Garranes (late fifth-early sixth century A.D.) to Cahercommaun (early ninth century A.D.) and Carraig Aille (eighth-late ninth century A.D.) (*Proc. R. I. Acad.*, vol. xlvii (1942); *ibid.*, lii (1949)). In the south of England at least a version of the type survives into the later Middle Ages (*London Mus. Medieval Catalogue* (1940), Pl. xi. The date of the Hownam knife is likely to lie between the sixth and ninth centuries A.D.

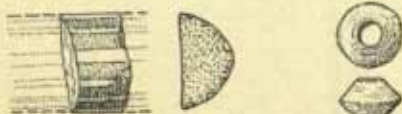


Fig. 13. Fragment of glass armlet from Hut II, and blue glass bead from storage pit, Area III. (1.)

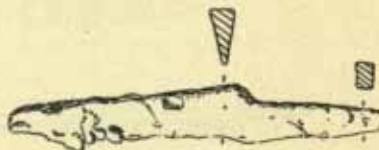


Fig. 14. Iron knife from disturbed area near fort entrance in Area II. (1.)

DISCUSSION.

The Hownam excavations have begun to throw a little light on the problem of the Iron Age of the Borders. But it is only the barest beginning, and, as in the case of almost all excavations which take place in new districts, the problems it sets, though perhaps not so fundamental, are more than it answers. Thus we know that at Hownam the initial phase was marked by the building of quite a small stockade enclosure—a protection surely only valuable against cattle robbers or wild animals. The palisade trenches into which the uprights of the stockade were bedded are detectable on other Roxburghshire forts, for instance at Hayhope Knowe at the head of the Bowmont valley,¹ and we can suppose on many other forts as well, though as there are very few, if any, superficial signs, they may not always be visible on the ground or by air photography, and not infrequently may have been obliterated by subsequent defences or occupation. At Hownam we can guess that this stage was approximately during the second or first century B.C. But who were the people responsible for the construction of these stockaded enclosures? Were they related to the people who apparently at the same time were also using timber on a big scale for the building of the Gallic forts? If so, in what way were these people connected with the Iron Age "A" people of England? Certainly the

¹ Excavated in June-July 1949.

pottery from the first phase at Hownam, as in all subsequent phases, suggests no influence other than the local derivatives of the Late Bronze Age. But of their types of houses, their social system, their mode of life, as yet we know nothing; nor can we suppose that their wooden stockades were intended for defence in warfare. But this need not imply that the people were necessarily peace-loving stock-farmers, for it is not impossible that their war-time defences were built more solidly, maybe even of stone, in places of greater natural strength. We can guess that the large amount of wood needed for the uprights of the stockade was locally obtained, but of the charcoal specimens identified from Hownam all were birch or hazel, and neither of these trees would flourish in thick forests, and this suggests fairly open vegetation.

Many Iron Age forts in England and Wales have had a palisade enclosure as their earliest phase, and this is frequently found to belong to the "A" culture. On the Welsh borders at Ffridd Faldwyn (Montgomery),¹ Old Oswestry (Salop), and again at Eddisbury (Cheshire)² this was found to be the case. So that the south Scottish examples are not without precedent; but how far, if at all, it will be found that they were inspired from the south, or whether they may have had an independent origin, remains to be seen as a result of future excavations.

Of the wall forts (Phase II at Hownam) we know a very little more, for they are at least more often visible on the ground. But without excavation it is naturally impossible to know whether or not they belong to the class of Gallic wall forts connected with the Abernethy culture, in which timber framework was used (and which when ignited becomes "vitrified"), or to another class with sheer-faced walls built without timber lacing, as at Hownam. The Gallic and vitrified forts of the Abernethy culture have in the past been supposed to belong to the Iron Age "B" culture complex, but it has recently been suggested that they are more probably connected with the earth and timber-framed forts of the Iron Age "A" in south England—a type of fort which gradually spread northwards to Scotland via the Welsh marches.³ But a number of south Scottish and highland zone forts with stone walls cannot be ascribed to that culture, and in many cases, in Wales and Scotland in particular, it was most probably the local descendants of the Late Bronze Age people who built these strongholds.⁴ At all events, the fact that this type of fort generally precedes the construction of multiple ramparts (or multiple walls) has been observed on other Roxburghshire forts⁵ and borne out by the results from Hownam. Other examples

¹ *Arch. Camb.*, vol. xevii. (1942), pp. 1-57.

² For both these sites, see Varley and Jackson, *Prehistoric Cheshire* (Chester, 1940).

³ Piggott, *British Prehistory* (Home University Library), p. 177.

⁴ An interesting Welsh example of a fort whose history appears to have been partly similar to Hownam Rings, is at Dinorwig, Llanddeiniolen, Caernarvonshire (*Arch. Camb.* (1947), pp. 231-48). Multiple ramparts had here been added to an earlier stone wall fort.

⁵ Details of these will be published in the near future by the Royal Commission on Ancient Monuments.

in Roxburghshire include Shaw Craigs, The Castles, Swindon, and Woden Law. These walls generally enclose quite a small area and seldom loop down below the crest of the hill. As a rule they are about 8 to 10 feet thick, faced with large stones and the core filled with rubble. One, possibly analogous example only, Hownam Law, encloses a very large area, and must be regarded as a tribal oppidum of some importance.

This phase at Hownam ended only shortly before the arrival of the Romans, so, on analogy, it may be supposed that the other forts mentioned as sharing similar characteristics are approximately the same date. Unfortunately, this second phase at Hownam produced only a little pottery and hardly any other objects, so that the cultural affinities of the people building these walled forts cannot be established. One point, however, is worthy of notice. Such pottery as was found from both Phase I and Phase II (and, to anticipate, Phase III as well) was so noticeably similar in character that it is almost certain that throughout the period of occupation the underlying peasant culture remained unchanged, and no new-comers arrived with different pottery or objects denoting an intrusive material culture. Instead, little development took place, and even the shapes of the pots hardly altered during two hundred years or more. Bearing this fact in mind, it is hardly believable that a sudden complete change in building technique took place, and that stonework suddenly replaced the use of timber. Such a theory would be less acceptable than that the two building techniques were to a certain extent contemporary, and that stonework was used for defence while timber stockades were used for undefended village compounds.

The last phase, represented by the building of multiple ramparts in place of the wall which was dismantled, began in the second half of the first century A.D. A large number of Roxburghshire forts show a similar addition of earthworks, and in the three forts already mentioned, Shaw Craigs, Woden Law and The Castles, Swindon, these ramparts replaced a single wall just as at Hownam, and the presence at Woden Law of what are almost certainly Agricola's siege-works bears out the Hownam evidence for a date in the late first century for these multiple ramparts.

But the excavations at Hownam show that once again the cultural heritage of this peasant community remained unchanged, and we can argue with some conviction that the innovations in methods of warfare, reflected in the building of defences in depth, did not result from a movement of large numbers of new peoples into the district. Rather than this it seems likely that only the leadership changed, and the new techniques of fighting which we know were in common use farther south were brought to the north at this time. We know that the south of England was greatly disturbed in the mid-first century by intertribal warfare following the Roman invasion. Aristocratic leaders and their families were driven from their own lands and

fled to found new kingdoms with their kinsmen elsewhere. So is it not probable that these multiple ditches mark the arrival of such political refugees from the south? Being established in their new lands, however precariously held against others who had moved to the same district, their tenure of these lands was but short, perhaps not twenty years, before they were involved in the new Roman advance under Agricola. If this hypothesis is correct, we can imagine that the multiple ramparts were dug with some urgency and preferably added to sites already fortified. It follows, then, that some of the single-walled forts which, as we have mentioned, were re-designed in this way must have been in use during or shortly before the mid-first century A.D., and the palisade enclosures, if they are earlier and not contemporary, need not be before the first century B.C. The 1949 excavations at Hayhope Knowe have thrown light on this palisade phase.

What happened to these forts after the arrival of the Romans? It is more than probable that those people living in fortified sites (if these were indeed permanently inhabited) were ordered to deface their ramparts, though they were evidently not forbidden to live on the site. This they did, and evidently lived peacefully until the withdrawal of the Romans. Then, once again, times of trouble are marked by the building of new forts in the Dark Ages, when hill-forts like Ruberslaw, The Dunion, and many others appear to have been constructed.

APPENDIX I.

The Animal Bones. By Miss PLATT, Royal Scottish Museum, Edinburgh.

Animal Bones from under the Stone Wall Fort in Cutting behind Hut I, Area II.

These are all remains of domestic animals such as one would associate with human habitation. No wild species are represented, if one excludes the rather doubtful evidence of a single tooth resembling the molar of a red deer.

Ox.—This seems to be the most numerous. There are fragments of humerus and tibia, and milk molars shed from a young beast, present.

Pony.—From the sparse remains it is impossible to estimate the size of the pony represented. Part of a left scapula can be recognised, and there is also a narrow lower molar tooth about 3 inches from the left side also.

Pig.—Milk molars alone represent this animal.

Animal Bones from under Second Rubble Rampart, Area I.

Sheep or Goat.—Horn cores suggest the latter; and animals of different size as adults are present. Also very slender vertebral fragments

suggest that some animals had probably been slaughtered as lambs. Bones from fore and hind limbs—humerus, radius and ulna, femur, tibia and fibula, and a skull fragment occur.

Ox.—All the larger fragments of bone belong to this animal. They are of a small and slender stock. Vertebral, rib and limb bone fragments are the most common.

? *Red Deer.*—One molar tooth is present here. As it is the only evidence of this wild species, it may be of fortuitous occurrence.

From Inner Rubble Rampart. Cuttings B and G, Area II.

Pony.—Two fragments form almost a complete radius, proving the size to be of a small, slender Celtic pony, probably between 12 and 13 h.h. There is also a proximal fragment of a cannon bone (metatarsal).

Ox.—This animal is represented by teeth, molars and pre-molars of adult animals, and shed milk molars.

Sheep.—One fragment of a rib alone occurs.

APPENDIX II.

Remains of Carbonised Wood. By M. Y. ORR,
Royal Botanic Garden, Edinburgh.

Phase II.—From under fort wall in cutting behind Hut I in Area III.
Birch.

Phase III.—Under second rubble rampart in Area I. *Hazel and Birch.*
From rubble rampart in Cutting D, Area II. *Hazel and Birch.*

From ditch under Hut II, Area IV. *Birch.*

Under rubble rampart in Cutting E, Area II. *Birch.*

Phase IV A.—From floor of Hut I, Area III. *Hazel.*

Phase IV B.—From floor of Hut II, Area IV. *Birch.*

From pit in Hut II, Area IV. *Hazel.*

APPENDIX III.

Petrological Report on the Stone Axe. By F. S. WALLIS, D.Sc., Ph.D.,
Bristol Museum.

(The number assigned to the axe is that of the serial index compiled by the Sub-Committee of the South-Western Group of Museums and Art Galleries on the Petrological Examination of Stone Axes.)

No. 423. *Macro.*—Fine-grained, pinkish, siliceous rock.

Micro.—Usual characteristics of Group VI (Stake Pass).

APPENDIX IV.

The Slags. By A. F. HALLIMOND, Geological Survey and Museum.

Phase II.—Under fort wall in cutting behind Hut I, Area III.

"This appears to be a typical iron slag."

Phase III.—Under rubble rampart in Cutting B, Area II.

"A frothed glass such as might result from accidental causes or might be glassy waste, but it is not an iron slag."

Phase IV B.—Floor of Hut II, Area IV.

"Seems to include both glass and iron, but iron-bearing minerals can of course appear in glassy waste."

IX.

TWO TEXTILES FROM THE NATIONAL MUSEUM, EDINBURGH.

By MRS GRACE M. CROWFOOT.

1. THE BALMACLELLAN DIAMOND TWILL (fig. 1 and Pl. XLII).

FA. 14. Twill cloth found with Celtic mirror and other bronzes at Balmaclellan, Dumfriesshire.¹

Several fragments of the cloth are preserved, the largest measuring 9 × 5 cm., and others 8 × 2.5 cm., 3 × 2.5 cm., and 2.3 × 2 cm. respectively; they are irregular and torn; all appear to come from the same textile. There is no trace of a selvedge.

Material.—Wool, a light brown in shade, probably the natural shade of the fleece. The wool was not sufficiently well preserved for study of the scale structure. Experts who examined it agree that the quality is fine. Monsieur R. Pfister writes: "La laine est fine . . . la plupart des fibres ont un diamètre de 15 à 25 μ . Les fibres au-dessus de 25 μ sont rares, je n'ai trouvée aucune au-dessus de 30 μ et pas un seul poil (hair)."

Thread.—There are two qualities of yarn. The finer, better spun thread, direction S, is taken to be the warp, the thicker, softer thread with direction Z is taken to be the weft. Counts about 11–14 × 14–16 per cm. The counts varied a good deal in different parts of the fragments; sometimes there was disproportion, wefts predominating, sometimes warp and weft were nearly equal. The thread looks as if the wool had received some preparation before

¹ *P.S.A.S.*, vol. iv. (1860–62), p. 294; vol. vii. (1866–68), p. 348 ff; E. T. Leeds, *Celtic Ornament*; C. F. C. Hawkes, *Antiquaries Journal*, vol. xx. (1940), p. 348 ff.

spinning, more possibly than the teasing by hand usual among primitive people. Miss I. F. Grant considers that the wool was not carded but combed, a traditional Highland craft method now extinct.

Weave.—Diamond twill, based on 2/2, displaced, repeating on 14 ends by 20 picks. Dr Martindale says of it: "This gives a good warp-ways elongated effect, and also the same appearance at the centre of every diamond. In this respect it is an improvement on the ordinary diamond with a square

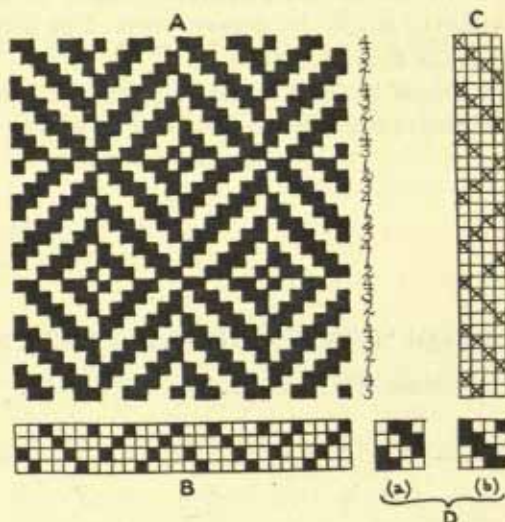


Fig. 1. The Balmaclellan diamond twill.

- A. Plan of weave.
- B. Entry.
- C. Order of pedalling or lifting plan (also shown by figures).
- D. Tie-up. (a) lower heddles (pedals); (b) raise heddles.

Black squares in plan of weave = weft, white = warp.

centre . . . the displacement referred to is the normal practice to produce a clean-cut effect at the junction of the twills."

Dating.—The cloth was found at Balmaclellan in a bog about half a mile from the manse, during the cutting of a drain. It was wrapped round four little packets of Celtic bronzes. Fortunately the Rev. George Murray, then minister of the parish, was able to record and preserve the hoard, and it was afterwards presented to the National Museum. On the dating Mr R. K. Stevenson says: "It is extremely hard to say what the likely date of the Balmaclellan cloth is, for though the objects round which it was wrapped might perhaps be first century A.D., there was no evidence to show how much later they ceased to be of practical value, for the plates had been removed from the box or whatever it was before the hoard was buried.

Still, I do not think that the burying of the hoard need be supposed to be later than the second or third century A.D."

Comparisons.—The earliest twill with which this cloth can be compared is the famous cloak from Gerumsberget in Sweden, dated to the Bronze Age by pollen analysis.¹ This is also a woollen reversible twill with a diamond, but a large one with irregularities, and the fabric is checked, so the resemblance is not close. In the same period to which the Balmaclellan cloth is attributed, second to third century A.D., the only diamond twills that I can quote are two from Palmyra, of much finer quality.² Later, we have a diamond twill among the Sutton Hoo textiles, probably of c. 650–670³ A.D., and one from Valsgårde in Sweden, c. A.D. 750.⁴ These two are both finer than the Balmaclellan twill, and have extreme preponderance of warp over weft, so that they are very different in appearance.

2. THE FALKIRK TARTAN (fig. 2 and Pl. XLII).

FR 483. Tartan cloth found with the Falkirk hoard, dated third century A.D.

Two fragments of this cloth are sufficiently preserved to show the weave; the largest, 7 cm. × 4 cm., shown on Pl. XLII, gives a full repeat of the design. Some tiny fragments and loose threads certainly come from the same textile.

Material.—Wool in two colours, dark brown and a pale greenish-brown shade. Both are natural shades of the fleece, the greenish hue being probably due to contact with the coins. Experts consulted agree that it is of fine quality. Monsieur R. Pfister writes: "Les fibres sont très fines. Il y a (dans les deux) beaucoup de fibres au-dessous de 20 μ ; dans les deux il y a quelques grosses fibres de 50, 70, 90 μ avec gros canal médullaire." The material was not sufficiently well preserved for study of the scale structure.

Thread.—The thread is Z spun throughout. Count about 6–7 × 6 per cm., but the pieces preserved are too small and too loose for accuracy in measurement. Miss I. F. Grant suggests, as for the Balmaclellan thread, that the wool had been prepared for spinning by combing. There is no selvedge, and the same quality of yarn is used throughout, so that there is nothing to show which actually is warp and which weft.

Weave.—The weave is shown in fig. 2 as a herring-bone twill, reversible. Having stripes both in warp and weft forming checks it may fairly be described as a tartan, although the weave is not the typical diagonal of the

¹ Post, L. Bronsalders manteln från Gerumsberget i Västergötland, 1925.

² R. Pfister, *Nouveaux textiles de Palmyre*, 1937, p. 24; L. 43, 44.

³ The Sutton Hoo textiles are not yet published, but a photograph of twills, including the diamond variety is shown in the Saxon Monastery of Whitby (*Archaeologia*, vol. lxxxix, (1943), pl. xxx, a).

⁴ Greta Arwidsson, *Valsgårde 6*, p. 93, pl. 39, D, G–H (1942).

clan fabrics. The stripes are formed, as shown, by setting up nine dark and nine light threads alternately in the warp, and eight dark and eight light in

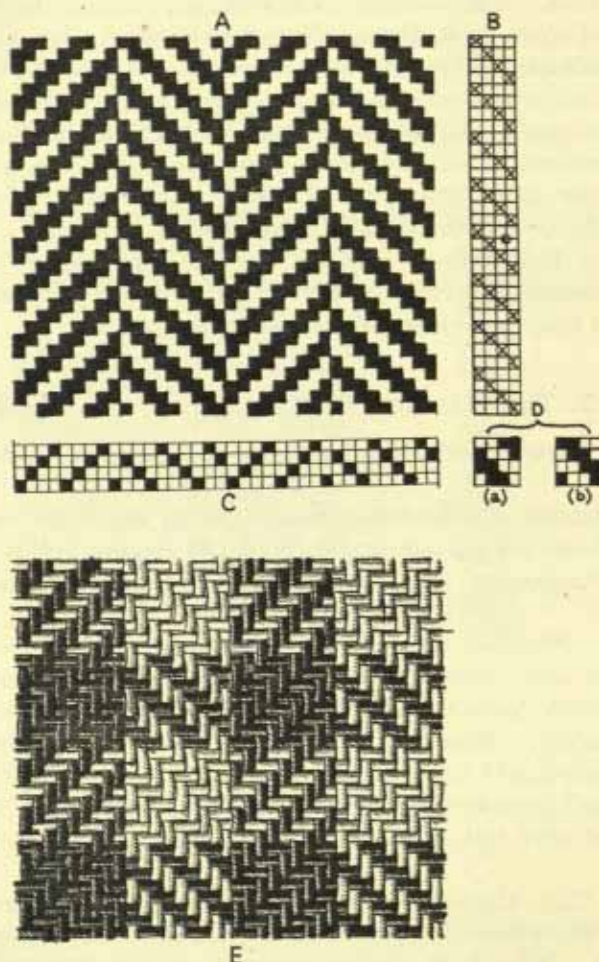
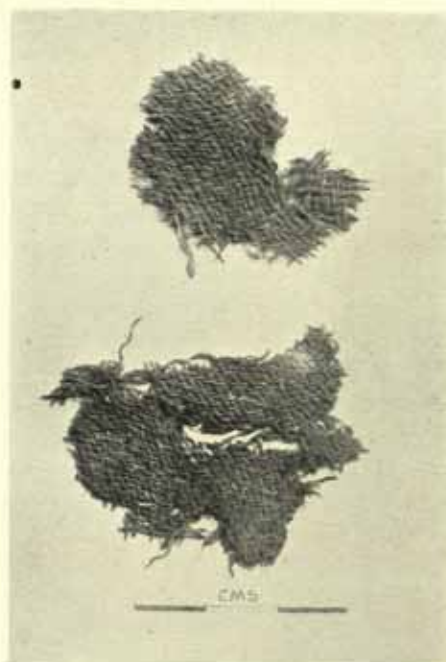


Fig. 2. The Falkirk tartan.

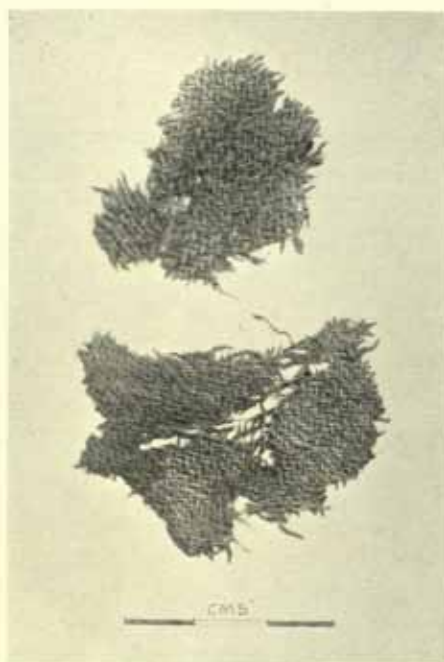
- A. Plan of weave.
- B. Pedalling or order of lifting plan of weave.
- C. Entry or thread-up of weave.
- D. Tie up or lifting plan. (a) lower heddle; (b) raise heddles.
- E. The check pattern.

Black squares in plan of weave = weft, white = warp.

the weft. The piece might, of course, have been set up as a "wave" instead of a "herring-bone," in which case there would be eight dark and eight light threads in the warp, and nine dark and nine light in the weft. The latter would suit better with our ideas of keeping the check square to the eye, but

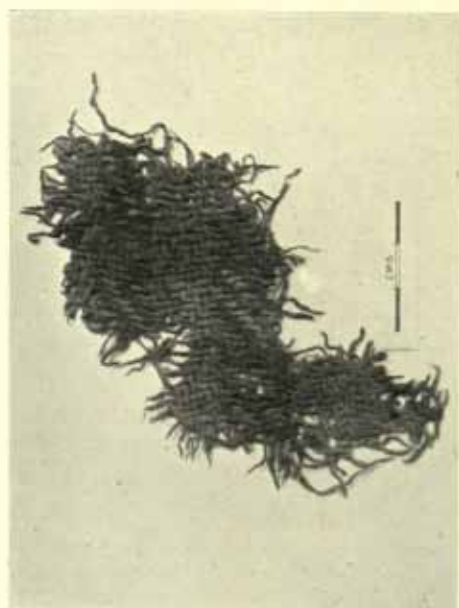


(a)

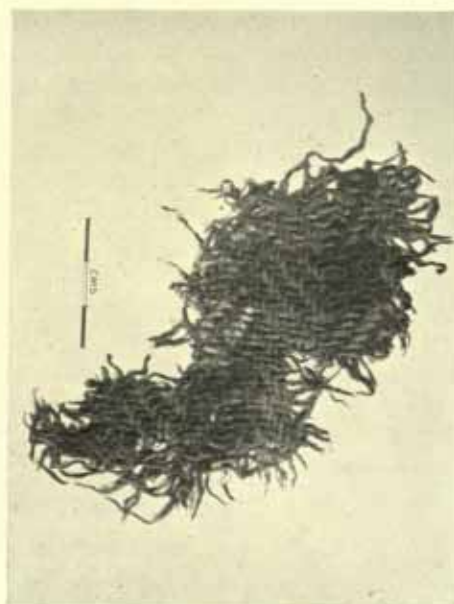


(b)

The Balmaclellan diamond twill: (a) back; (b) front.



(a)



(b)

The Falkirk tartan: (a) back; (b) front.

GRACE M. CROWFOOT.

[Photos by Lynceek.

[To face p. 228.

on primitive looms without a reed there is a tendency for the warp to draw in, and the extra thread may have been put in the warp to counteract this. If set up as a herring-bone the entry is complicated but the weave is simple, 1234; if as a wave the entry is simple, 2/2, but the heddling somewhat difficult. Dr Martindale, of Galashiels Technical College, to whom the vexed question, herring-bone or wave? was submitted, replied that he considered it highly conjectural, but favoured a herring-bone.

The Loom.—This twill could have been woven on the loom usually thought to have been in use in the North during this time, the warp weighted loom, or on the loom known to have also been used by the Romans, the vertical or tapestry loom. In either case four rod heddles would probably have been set up for the herring-bone design, or three heddles and a shed rod as for the twills woven by Navaho Indians on their vertical loom.¹ There is no evidence for the treadle loom in the North at this time.²

Dating.—This fragment of a woollen tartan was found with the famous Falkirk hoard of silver coins in circumstances which make it certain that it is of the same period as the hoard.³ Sir George Macdonald describes how, during levelling operations in Bell's Meadow, north of Callendar Park, a workman struck with his spade "a vessel of red earthenware approximating in shape to a type familiar to excavators on Hadrian's wall, where it occurs in association with objects of third-century date. The jar must have been cracked with the blow it had received. It broke on being lifted, and there fell from it a hard metallic cluster covered with green mould, as well as the remains of a cloth which had evidently been used to protect the mouth. Fragments which detached themselves from the mass were seen to be silver coins."

The date of the earliest of the coins (more than 1925 in number) is 83 B.C., while the latest was minted in A.D. 230. All the coins, even the latest of them, appeared used, and therefore Sir George concluded that the hoard was probably the "outcome of perhaps 120 years of thrift, the family savings of four generations," and that the date of concealment must have been about A.D. 240 or 250. Owing to the troublous times the treasure was never recovered. It is safe, therefore, to assign the cloth found in the earthenware jar with the coins also to the third century A.D.

Comparisons.—Twill weaves are known as early as the Hallstatt period, the herring-bone variety not until later, *e.g.* in the Roman period at Sackrau and at Dura on the Euphrates.⁴ But I can only find one example of a check twill, and that is of still earlier date—the Gerumsberget cloak already mentioned.⁵ This has stripes in both warp and weft, of light and dark wool,

¹ Amsden, *Navaho Weaving*, pls. 17, 31, p. 53.

² Weaving instructions for treadle loom, figs. 1 and 2, are added for benefit of modern handweavers.

³ Sir George Macdonald, "Roman Coins found in Scotland," *P.S.A.S.*, vol. lxviii. (1933-34), p. 32.

⁴ R. Pfister and L. Bellinger, *The textiles, Dura Europos*, 1945, p. 22, No. 36, and pl. xxxii, Dv.

⁵ Post, *L. op. cit.*

usually four threads of each, making small checks; the thread is all S spun; the count of 74-65 per 10 cm. is very similar to ours. The technique has so many primitive traits that Dr Bjorn Hougen thinks that twills may have been new to the weavers of that day.

The Falkirk twill is certainly the earliest herring-bone recorded for Scotland, and the earliest tartan too if we may claim it as such on the strength of the stripes and checks. Tradition is strong that tartans were in use in very early days under the Gaelic name *breachan* from *breac*, vari-coloured or speckled, but it is not till the sixteenth century that we have evidence for their general use. The Falkirk tartan is no legendary or rare piece, no *cath-dath*, with seven colours for a chieftain or four for his followers, but a "poor man's plaid" with two colours only, dark and light brown. It is a true folk weave, of a kind we may imagine to have persisted for homely wear while the coloured varieties were evolving, and which to-day we should include in the lowly class of "district checks."

Conclusion.—Both the textiles described here are of considerable interest. They are unusually well dated: the Balmaclellan diamond twill with some probability to the second-third century A.D., if not earlier; the Falkirk tartan with certainty to the third century A.D., that time after the Romans left, when "thick darkness descends upon Central Scotland." Both are good technically, the Balmaclellan cloth being perhaps the more remarkable of the two—a finer weave and a slightly finer quality of wool, while the tartan has more bearing on the evolution of weaving in Scotland.

A further question, whether any light could be thrown on the evolution of the sheep of our isles by a study of the wool, was referred to Dr Wilsdon, Director of Research, W.I.R.A., accompanied by samples from these two textiles (Nos. 1 and 2), as well as one from a Viking grave on Eigg (No. 3), and another from Loch Laggan (No. 4). Dr Wilsdon most kindly writes: "We have examined the samples of archaeological interest you sent us. First, we must state that it is difficult to draw reliable conclusions from such materials: the presence or absence of coarse hairs is not really very conclusive. We know, however, that the early sheep of Britain, *i.e.* those occurring during the periods represented by samples 1 and 2, had relatively fine wool. This is borne out by these samples 1 and 2, which consist of fine wool only. It is thought that at a considerably later period the double-coated sheep (fine wool undercoat and coarse outercoat), represented to-day by the Scottish Mountain Blackface, immigrated from the Pennines into Scotland. It is interesting to note, therefore, that sample No. 3 from a Viking grave contains a *few* coarse fibres, and that sample No. 4 (mediæval) contains a considerable proportion of coarse fibres."

He further comments that there has been little or no continuous study of types of wool grown in Britain through the ages, and that "such an

investigation should provide an extraordinarily interesting and useful contribution to historical knowledge."

The work done here, with his assistance, and that of others mentioned below,¹ is a small contribution towards this end.

X.

THE ROMAN ROAD TO RAEBURNFOOT.

By A. GRAHAM, M.A., F.S.A., F.S.A.Scot.

In his recent paper on "A New Roman Mountain-Road in Dumfriesshire and Roxburghshire,"² Dr Richmond pointed out that the fort of Raeburnfoot was sited so as to watch not only the Rae Burn valley, but also "a gap by which there is an easy approach to Eskdale from the south-west," and he inferred from this that his newly discovered road, originating presumably at Trimontium, "once ran across the dale [*i.e.* Eskdale] to join the main north and south road somewhere near Lockerbie, at the foot of Dryfedale."³ This inference has now been proved valid through the identification by Dr Richmond, in July 1948, of remains of a Roman road in the "gap" south-west of Raeburnfoot, at distances of from 1300 to 2300 yards from the fort, and the Royal Commission on the Ancient Monuments of Scotland has authorized the publication of the following notes regarding this new discovery. The terrain is described in terms of the 6-inch O.S. map of Dumfriesshire, 2nd edition, sheet XXVI S.W., and the six-figure references are to large square 35 of the National Grid as shown on the 1-inch O.S. map of Scotland, "popular" edition, sheet 85.

The traffic-tracks of post-Roman age, which were noted by Dr Richmond as following the Roman route between Mid Raeburn and Northhope Haugh, reappear west of the arable fields of Craighaugh (248984) on the right bank of the Esk; and if these are followed in a south-south-westerly direction across the Ryehill Burn and the wall that descends to the Holm Burn from Long Knowe, it will be found that, at a distance of about 160 yards beyond the wall (244977), there develops a fine stretch of terraced roadway which Dr Richmond considers to be undoubted Roman work. It is about 120 yards in length by up to 27 feet in breadth, and is aligned directly on the fort at Raeburnfoot. Above this stretch the line of the road is occupied by a small but deeply cut burn, not marked on the 6-inch map, which has

¹ Grateful thanks for examinations of material and information are due to the Shirley Institute, the Wool Industries Research Bureau, Galashiels Technical College, Monsieur R. Pfister, Major McClintock and Miss I. F. Grant; also to Mrs Griffith for the ink drawings.

² *P.S.A.S.*, vol. lxxx, pp. 103-17.

³ *Ibid.*, p. 116.

washed it out for a distance of about 250 yards; but above the source of this burn, and some drains which feed it, further Roman work appears in the form of a cutting, up to 5 feet in depth by 30 feet in width, and again aligned exactly on the fort (Pls. XLIII and XLIV, 1). At its upper end the cutting curves sharply to the south, apparently to skirt the eastern side of a small area of moss; its total length, including the short curved portion, is approximately 230 yards. In this section of the work recourse has evidently been had to the same technique, of removing the overlying peat to obtain a solid foundation, as was previously noted by Dr Richmond and discussed in his paper.¹

No further remains of the road can be identified with certainty for 100 yards or more, although what seems to be an artificial bay on the eastern side of the small moss, with a scarp up to 5 feet in height, may well indicate its course. At the watershed, however, just east of the ruined house called Watcarrick Dinnings (240976), a transverse ridge has been cut through by a notch for a distance of some 50 yards; and although the easternmost 20 yards of this notch probably represent no more than a hollowed traffic-track, the westernmost portion must have been cut purposefully, and is doubtless Roman work (Pl. XLIV, 2). This part of the cutting is now about 11 feet in depth at its deepest point, its bottom being flat and about 10 feet in width; a slight change in the slope of its sides, however, 2 feet above the bottom, suggests that it has been deepened by traffic to this extent, and at a depth of 9 feet its bottom would have been fully 15 feet in width. It thus fits well with the hypothesis of a Roman road 18 to 20 feet wide somewhat contracted at the notch to save excavation, and subsequently deepened, with consequent narrowing of the bottom, by traffic of the hollow-track phase. From the western end of the notch a cambered road-mound up to 20 feet in width runs west for 46 yards, dips under a low turf-dyke, and is finally obliterated in the small paddock attached to Watcarrick Dinnings.

Beyond this point no certain remains of Roman work could be identified, but it seems impossible to doubt that the hollowed and terraced tracks, which descend to the Black Burn, skirt the base of Plea Knowe, cross Letterstone Heights at Fauld Brae, and coalesce with the modern road from Eskdalemuir to Lockerbie at the foot of Letterstone Shank (237961), are following the general line of a Roman route. The same may be said of the modern road itself from this point at least as far as Fenton Yet (192932), beyond which the ground was not examined; the tracks were found to accompany or underlie the modern road as far as this point, and the whole of this line is the logical continuation of the portion identified as Roman north-east of Watcarrick Dinnings.

In connection with the post-Roman tracks a word of caution is necessary.

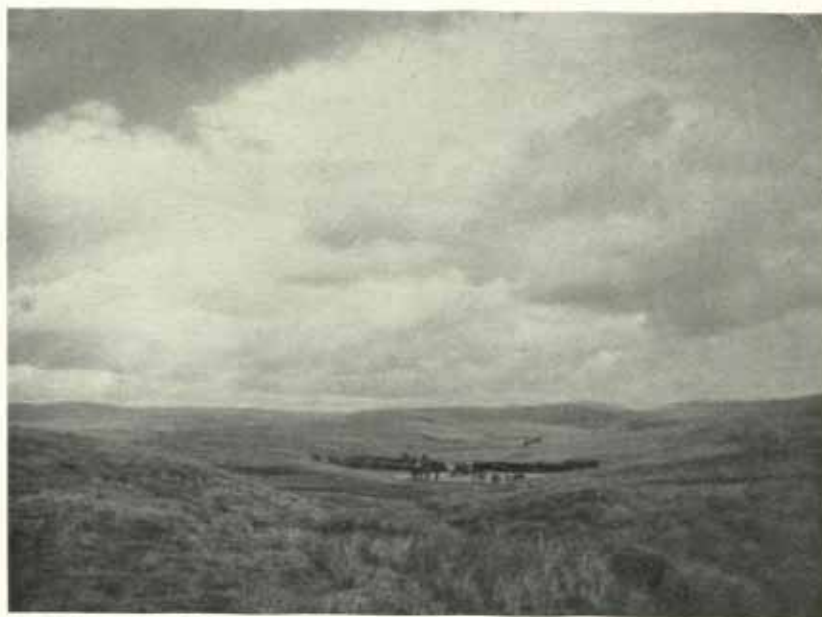
¹ *P.S.A.S.*, vol. lxxx., p. 115.



1. Roman road-cutting above the source of the Holm Burn.



2. South side of Roman road-cutting above the Holm Burn,
from the north.



1. Distant view of Raeburnfoot seen along cutting of Roman road (in foreground).



2. Roman road-cutting east of Watercreek Dinnings,
from the east.

A. GRAHAM.

Those which take the form of a terrace may often reach a breadth of up to 20 feet, and their apparent scarping and grading may well suggest the effects of purposeful construction. However, evidence obtained by the trenching of a terraced track of this type in Roxburghshire shows that they can be formed, on a suitable subsoil, solely by the passage of traffic, and in consequence even a broad and apparently well-graded terrace should not be regarded as being of Roman origin unless positive structural remains are found below the surface. More suggestive, perhaps, but still not to be accepted on superficial evidence alone, is the highest-lying and oldest of the terraced tracks that flank the modern road as it approaches the left bank of the Twiglees Burn, some 40 yards north-east of the bridge. Here a modern quarry, which cuts off the south-western end of the track in question, shows it in section as having apparently been cut and scarped to a level on the surface of the underlying rock; while a similar appearance is shown by pieces of old track which diverge from the north-western side of the modern road at 219945 and 209937. At the latter point a small roadside quarry again shows the track in partial section. The resemblance of this levelling of the surface to the Roman technique described by Dr Richmond's paper suggests that these pieces of old track may deserve some further study.

It remains to review the evidence for a Roman road running up Eskdale from Netherby, and linking that fort with the route now under discussion in the manner suggested by Dr Richmond.¹ The literary record² is exceptionally positive and clear, and on that account alone can hardly be disregarded. Again, the hint given by the first of the passages referred to, that the road crossed the Wauchope Burn near Wauchope Bridge, is borne out by the lie of the ground—below the bridge the burn enters a ravine, with the result that the site of the bridge is the lowest convenient place for effecting a crossing, while a short distance above it the left bank becomes high and cliff-like. Moreover, the right bank, though fairly steep at the bridge, is there marked by hollow tracks which speak of traffic in the past. On the other hand, the actual trough in which the Esk runs above Langholm is generally unsuitable for the passage of a Roman road, being twisty and largely steep-sided, and in places passing through difficult gorge-like narrows. The ground on either bank is also a good deal cut up by transverse valleys, that of the Black Esk forming the most serious obstacle.³ Notwithstanding these drawbacks, however, it would certainly be possible, by dint of detours and some bridging, to lay out a road from Broomholm

¹ *P.S.A.S.*, vol. lxxx., p. 117.

² *Statistical Account of Scotland*, xiii., p. 597; xiv., p. 422; *New Statistical Account of Scotland*, iv., pp. 404 (note), 420, 490. The two last references, however, add nothing to the evidence of the *Statistical Account of Scotland*, from which they have merely been copied.

³ No trace of a Roman road has been found approaching the right bank of the Black Esk through the belt of high ground extending from Carterton Knowes to Baillie Hill.

to Raeburnfoot which conformed satisfactorily with Roman military requirements; and there is no reason to suppose that the eighteenth-century records may not well refer to a road which followed such a course—perhaps now on one bank and now on the other. Systematic search for such a road, based on a careful study of the local topography, might perhaps even now yield interesting results.

XI.

NEOLITHIC POTTERY FROM KNAPPERS FARM, NEAR GLASGOW. By REAY R. MACKAY, F.S.A.Scot.

The bowl and the flint artefact (Nos. 1 and 2 in the detailed description below) were found in a grave near Knappers Farm, Clydebank, Dunbartonshire, in September 1937. There seems to have been a small, roughly circular grave with irregular boulder-built sides. When found, the bowl contained carbonaceous earth with traces of calcined bones. Although in a fractured condition, it was for the most part complete after it had been assembled.

Some other sherds, probably representing three vessels, were also found between 1937 and 1938 (Nos. 3 to 6 below). They were not definitely associated with any structures and need not necessarily represent sepulchral ware; of these, 3 and 4 were found in the prehistoric surface level. In addition, a fairly large amount of Bronze Age pottery was found but not one sherd of beaker ware, nor any evidence of a later inhabitation of the site.

DETAILED DESCRIPTION OF THE FINDS.

Contents of the Grave.

(1) Bowl: Form A (fig. 1, 1, and Pl. XLV, 1). It is undecorated, of hard burnished black ware, with large grits and a "roll-over"-type rim. There is a single secondary perforation under the rim, which appears to have been the only one made. An apparently single secondary perforation occurs, for example, in a vessel from Sir Lindsay Scott's excavation of the chambered cairn of Clettraval.¹ In form No. 1 is somewhat similar to one from Bicker's Houses.²

(2) Flint Blade (fig. 2). This object is a knife which falls within the plano-convex group described by Dr J. G. D. Clark,³ and most commonly

¹ *P.S.A.S.*, vol. lxix. p. 504, fig. 19.

² Callander, *P.S.A.S.*, vol. lxiii. p. 49, figs. 21 and 39, No. 5.

³ *Ant. Journ.*, vol. xii. p. 158. I am particularly indebted to Professor Piggott for this information.

known from Early Bronze Age food-vessel contexts. Similar knives have, however, been found in association with Neolithic pottery in West Scottish chambered tombs (e.g. at Torlin¹ in Arran) and, although there is later

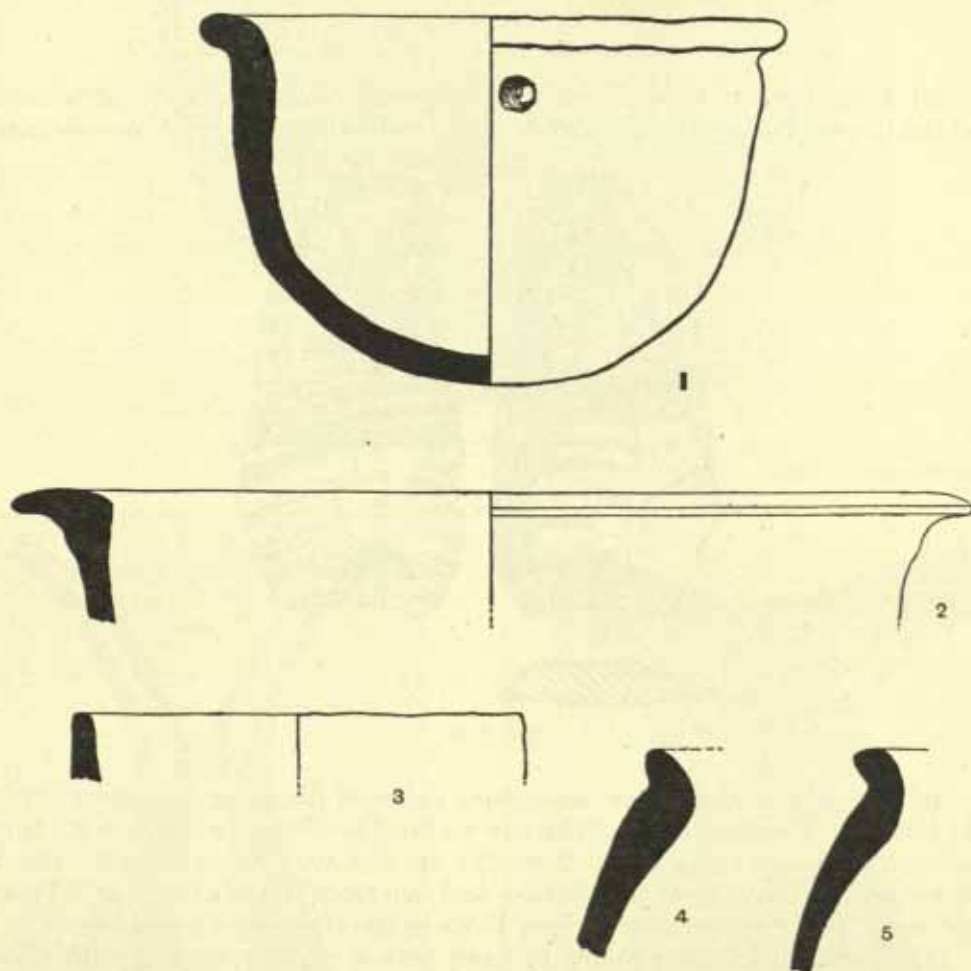


Fig. 1. Scale $\frac{1}{4}$.

Bronze Age material from Knappers, there seems no reason to doubt its direct association with the bowl above. The knife belongs to a type of Dr Clark's having a "straight chisel-like extremity." The corticed primary flake has had three large flakes trimmed from the upper surface before its removal from the core, and has been extensively trimmed along one edge

¹ Bryce, *P.S.A.S.*, vol. xxxvi. p. 84. Also cf. apparent associations at Midhowe (*P.S.A.S.*, vol. lxviii. p. 335, fig. 15) and Blackhammer (*P.S.A.S.*, vol. lxxi. p. 304, fig. 7) in Orkney.

and at the non-bulbar end. There is a break at the butt end, and although not worked, the slightly concave edge produced seems to show signs of use as a hollow scraper.

Miscellaneous Sherds (not from the Grave).

(3) Fragment of vessel with flat projecting rim (fig. 1, 2) of a hard reddish-brown paste with fine grits; it has radial flutings which are confined

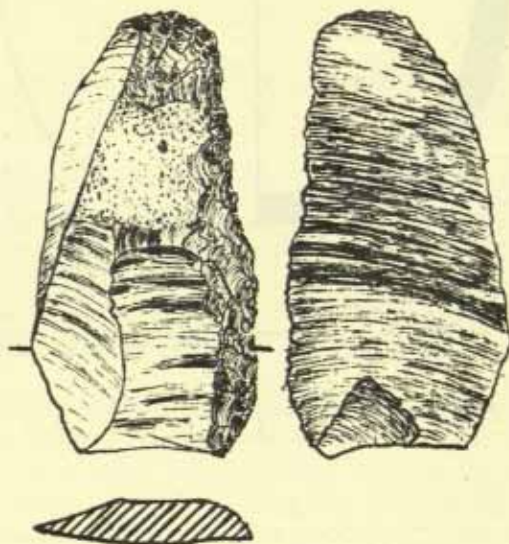


Fig. 2 (1).

to the top of the rim. The maximum external diameter has been about $10\frac{1}{2}$ inches. The fluted top of the rim and inside of the wall have a slightly polished surface. Close parallels to this are not very common in Scotland. Two examples come from Glecknabae and one from Giant's Graves.¹ These rims may belong to vessels of Form E, as in the Glecknabae specimen.²

(4) Fragment of what seems to have been a small open cup with plain rim (fig. 1, 3) of fairly soft light brown paste with small grits of crushed micaceous granite. The external diameter at the rim has been about 5 inches.

(5) Two sherds (fig. 1, 4 and 5) which, along with 11 wall and base fragments, are of light brown or greyish-coloured paste with medium grits. They probably represent one vessel. No. 4 seems to have an abnormal thickening of the rim, and the correct vertical position of the cross-section

¹ Callander, *P.S.A.S.*, vol. lxiii., figs. 39, No. 4; 22; 39, No. 6; 23; and 39, No. 7.

² *Ibid.*, figs. 22 and 39, No. 6.

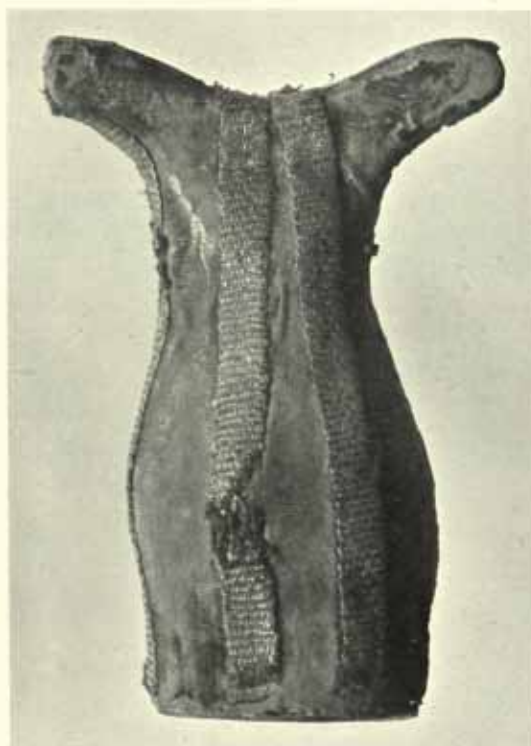


1. Neolithic Bowl from Knappers Farm, Glasgow. ($\frac{8}{12}$.)

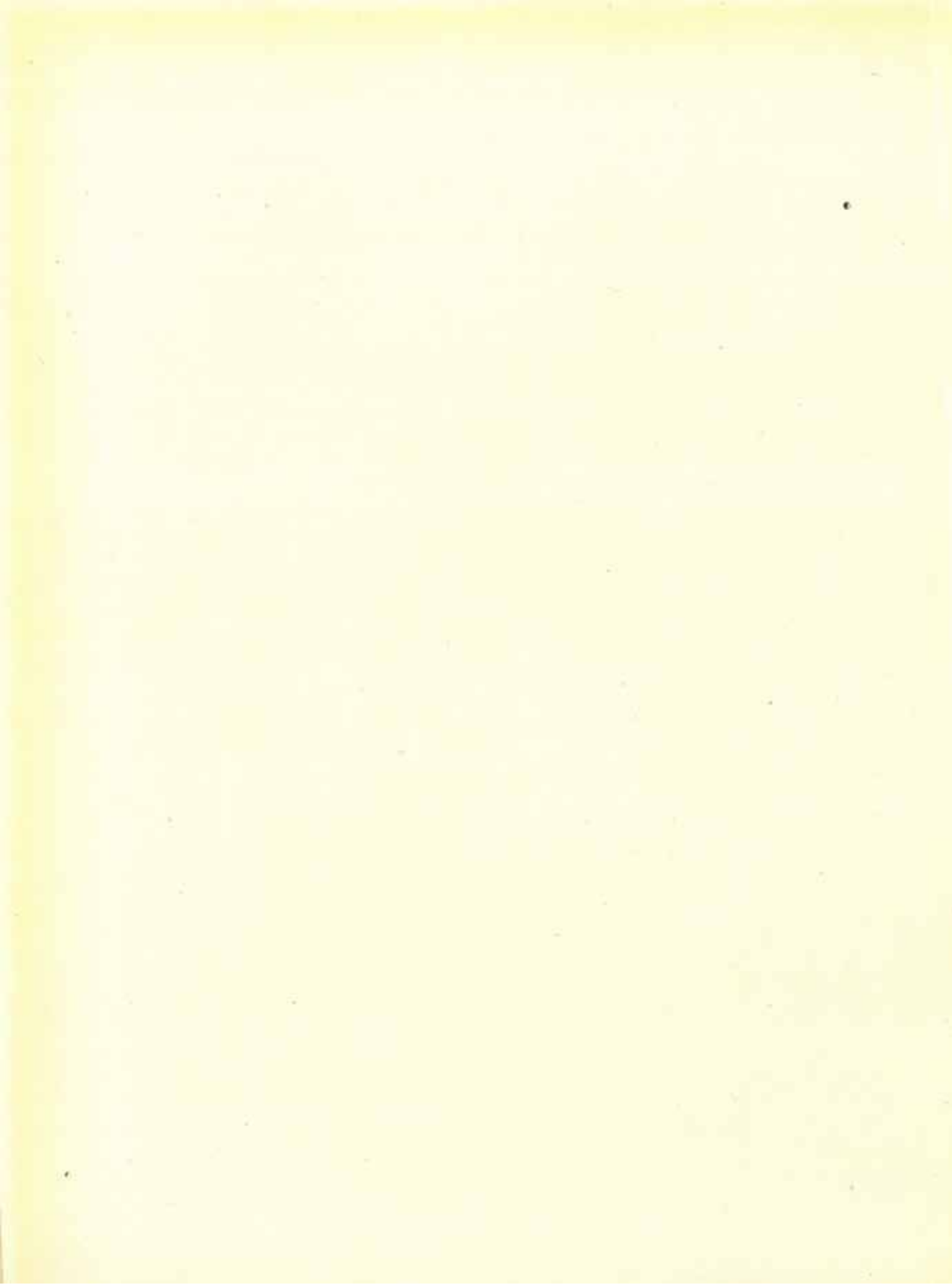
[Author's copyright reserved.



2. Gold Coronation Ampulla, 1633.



3. Case for Ampulla. ($\frac{7}{10}$.)



is unknown. In No. 5 the cross-section illustrated is probably in the right position, and if this is the case it may represent a globular pot.

Scottish examples of this type come from Clettraval,¹ and were recognised as a distinct class by Professor Piggott at Maiden Castle.²

All the pottery is of Class A (Windmill Hill or "Western" Neolithic ware), but owing to the lack of stratigraphical evidence, not only from this site but from the whole of Scotland, it is not yet possible to make any subdivision. At the time of discovery the absence of beaker ware was noted, and an examination of the Neolithic pottery has now shown that Class B (Peterborough ware) is evidently absent also.

My warmest thanks are due to Professor Piggott and to Mr R. B. K. Stevenson for their valuable advice and freely rendered assistance, and also to Mr Mann for permission to examine and publish the material.

XII.

CHARLES I'S CORONATION AMPULLA. BY ROBERT B. K.
STEVENSON, M.A., F.S.A.Scot., KEEPER OF THE MUSEUM.

A unique vial of gold was offered for sale in London in March 1948, after being preserved for generations by the Sutties of Balgone. Its history had been engraved on it as follows (Pl. XLV, 2):—

AMPVLLA

AVREA SACRI *olei*

*Receptaculum quo CAROLVS
eius nominis primus Scotiæ
Angliæ Fran : et Hib : Rex
Edinburgi in Ecclesia
S : Crucis unctus fuit*

Iunii XVIII

1633

As announced at the time, the Society was enabled, through the generous

¹ *P.S.A.S.*, vol. lxi. p. 480.

² *Reports of the Research Committee of the Society of Antiquaries*, No. XII. "Maiden Castle, Dorset," p. 141 (4).

action of the Countess of Eglinton, Trustee of the late Sir George Grant Suttie, in withdrawing the ampulla from public auction, to purchase for the National Museum this notable relic of the most splendid Coronation ceremony in Scotland's history. A substantial contribution towards the price was made by the National Art-Collections Fund. (For our subsequently launched Special Purchase Fund, see p. .)

In his account of "Four Scottish Coronations,"¹ the Rev. Professor James Cooper stated that the "golden Ampule or vial with the sacred oil," referred to in the official records, still existed in the possession or custody of Sir George Grant Suttie, Bart. Later, in 1907, it was exhibited by permission of Lady Susan Grant Suttie to the Scottish Ecclesiological Society during a visit to Seton Chapel. The minister, Mr Anderson, then said that the ampulla was known to have been kept very private from George IV when he had visited Prestongrange. While it is not known how the ampulla came to Balgone, it has been suggested that it may have been furnished for the Coronation by a George Suttie who was then Treasurer of Edinburgh and who may have retained it after use.

Full details of the complicated Anointing Ceremony are readily accessible in Sir Francis Grant's paper, entitled "State Ceremonials in Edinburgh in the Olden Time," in the Book of the Old Edinburgh Club.² A synoptic account of the two contemporary published versions of the ceremony was given by the 3rd Marquess of Bute in his *Scottish Coronations* (1902). He noted a curious discrepancy. The Form originally written down by Archbishop Laud's secretary, and which the Marquess suggested was a draft sent to Scotland beforehand, directed that the oil vessel should be of silver, whereas the account of the Lyon King of Arms, Sir James Balfour, who actually carried it, called it a golden ampule. The Marquess also remarked (p. 93): "It is interesting to note that both the draft and Sir James habitually call the oil the *sacred* oil."

The ampulla itself, which is entirely of gold, stands to a height of 5 inches and weighs 3½ oz. troy, and would hold almost 3½ fluid oz. of oil. Its main constituent is a pear-shaped vessel 2.6 inches high and at most 2.1 inches broad, with a low (.5 inch) pedestal base 1.6 inches in greatest diameter. The upper .17 inch of the pear is vertical, and is encircled three times on the outside by a carefully cut thread to allow the lid to be screwed over it. The foot is made of three pieces: first a ring forming a deep hollow moulding, which in turn stands on a convex moulding finished by a flat ring projecting internally as well as externally. After the pieces were assembled, the convex moulding was decorated with a kind of egg-and-tongue pattern remarkable for the crudeness of its execution. At first glance it

¹ *Trans. Abdn. and Glas. Eccles. Soc.*, 1902, p. 27.

² 1932, pp. 18-19; see also p. 16.

looks as if it were scratched, but it is deeply cut—once so much as to cut right through for a length of .16 inch.

The lid consists of a number of pieces. First there is a vertical-sided ring grooved inside to screw over the body. Over it was placed a disc 1.05 inches in diameter, perforated by two oval holes (.48 × .36 inch and .45 × .41 inch) with their long axes in a line. Into these were fastened two horn-shaped and diverging spouts, each tapering to a nozzle encircled by two small rings set close together. The horns measure 2.2 inches along their greatest curvature, and the inside diameter of the nozzles is only .12 inch. Though all the other joints are neat, with little trace of solder even on the underside, slightly copper-coloured gold solder forms an ugly joint around the base of each horn, while in the case of one of them something serious seems to have happened. A piece one-third of its circumference, and rising at most .6 inch back to back with the other horn, is identical to it in internal finish, but the remainder has been subsequently inserted in such a way as to cause a projecting overlapping joint inside, and a rising seam visible outside with an ugly kink at the crest. Solder has been daubed outside along the join. Lastly, the lower parts of the horns are united to one another by a strange little strip soldered between them, and rising to a point .3 inch above the surface of the lid.

There does not appear to be an easy solution to these inconsistencies in craftsmanship. The body of the vessel is elegantly designed and excellently carried out, but the decoration on the base looks like a hurried afterthought. Mr Ian Finlay, however, tells me that Scottish engraving was habitually of a lower standard than the metal-working. The lower part of the lid is good, and the screw suggests that the vessel had from the beginning been designed to hold oil. Moreover, the horns themselves are subtly shaped and well finished, though slightly dented with time, and show no external trace of their longitudinal joint; they can hardly represent an addition to the design. There has never been a division up the centre of the flask to correspond with the two nozzles, and clearly only one substance was contained in the vial. The shape and size of the body are such that it can be conveniently grasped in the hand. The two nozzles, besides providing a necessary airhole and an alternative in case of a stoppage, would allow the oil to be poured to right and to left without the grip being shifted. The horn shape may have been an intentional reference to the Horn of Zadok, mentioned in the text of the Coronation sermon (1 Kings i. 39). Neither accidental damage requiring replacement nor an initial incorrect diameter would explain in themselves the two pieces of the imperfect horn. But an accident at the last moment might have necessitated the use of a thoughtless and inexpert workman, and the deficiencies can only be seen by a close observer. The Coronation was a much postponed and controversial ceremony, and the change of plan, noted by the Marquess of Bute, from a

silver to a gold vessel, may in any case not have left much time for leisurely preparation. Though no maker's marks were ever placed on the vessel, it may be assumed, both from these circumstances and from the features of the execution, that the ampulla was made in Scotland, probably either in Edinburgh or the adjoining Canongate.

As shown in the illustration, the lettering of the inscription is well designed and executed, if we except the inconsistencies in the use of capital letters at the beginning. It appears to be of seventeenth-century date, though from its very nature subsequent to the use of the vial. The wording of the first two lines corresponds with that of Sir James Balfour's description, cited above.

The specially shaped case is doubtless contemporary. Two identical halves come entirely apart. They are fastened by two brass hooks, one on either side of one half and entering upwards into two eyes on the other. The body is formed of thin sheets of leather, covering at the base a flat semi-circular piece of wood. The inside is lined with red velvet and the outside covered with green velvet, the latter now very worn and entirely wanting on the base of one half, along with the corresponding leather. Strips of silver tape $\frac{1}{4}$ inch wide ran the length of each edge and along the top, and a pair up the middle of each half—only the pairs and one side piece remain. The tape is woven from yellow-brown woollen thread which has silver foil wound round it.

The shapes of Coronation oil vessels are very various. The original English ones were destroyed as a result of the Civil War, and that now used is considered to have been made after the Restoration.¹ Following fourteenth-century precedent, it is in the shape of an eagle 9 inches high with outstretched wings, standing on a pedestal. The head forms a lid, which screws off and on at the neck. The body can hold about 6 oz. of oil, poured out through the beak. The officiating Archbishop pours the oil into a special spoon (in part very old, about A.D. 1200), into which he then dips the tips of two fingers. At earlier Coronations there were two oil vessels,² one being for the especially sacred and priestly Chrism, which was a compound of oil and balsam.³ The Kings of France were also anointed with Chrism, mixed with oil from the Sainte Ampoule destroyed at the Revolution, "a small object about the size of a pocket scent bottle."⁴ The medieval Kings of Jerusalem and Sicily were anointed, but with oil only, not with Chrism, and in 1329, after a famous controversy, the Pope granted to the King of Scotland the right to be anointed with oil. Of countries where the

¹ J. Jackson, *Illustrated History of English Plate*, 1911. See also G. J. Younghusband and C. Davenport, *Crown Jewels of England*, 1919.

² P. E. Schramm, *History of the English Coronation* (1937), p. 100, has an important chapter on anointing.

³ Marquess of Bute, *op. cit.*, p. 230.

⁴ *Ibid.*, pp. 264-7, 284-9.

Reformed faith prevailed, anointing was not confined to the British Isles. The Danish vessel ¹ was made between 1660 and 1670. It is a cylindrical vessel little over 3 inches high, ornamented with enamelled flowers and set with tablecut diamonds. The screw-lid is flat, and clearly the oil was not poured out. The Swedish vessel is shaped like a horn and was made in 1606.²

XIII.

"FORT" AT SCOTSTARVIT COVERT, FIFE.

By GERHARD BERSU, HON.F.S.A., HON.F.S.A.Scot.

When mapped in 1892 on the 25-inch map, the oval enclosure, with a circular bank inside, at Scotstarvit Covert ³ marked as "Fort" _f was covered

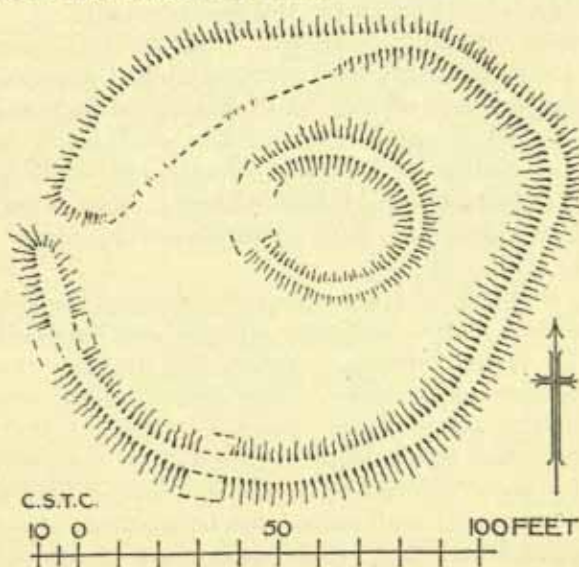


Fig. 1. Plan of Scotstarvit.

with oak and beech trees. Its features must then have been distinct, as the details of an overgrown site are not easy to discern, and yet it is mapped quite accurately. In its present state only a trained archæologist would recognise it as an ancient monument, for during the First World War the

¹ For details I am indebted to the Keeper of the Rosenborg Castle, Copenhagen. It was last used in 1840.

² Information from the Director of the Royal Armoury, Stockholm. I have been unable to consult the description published by R. Cederström, *De Svenska Rikets regalierna*, pp. 172-9 (Stockholm, 1942).

³ Nat. Grid ref. 37/361108.

covert was cut down, trees were dragged over the site and gaps created in the flattened banks. The site became infested with rabbits, and digging for them by the gamekeepers did not improve matters.

The *Inventory of Fife*¹ contains a plan drawn apparently after a visit on 26th April 1926, here reproduced as fig. 1 by the kind permission of H.M. Stationery Office. The site is recorded as "Fort" under No. 23, and the relevant parts of its description are: "In cutting down the trees, the ramparts, which are nowhere more than three feet high, have been much spread and in places broken to provide a passage. The construction is of a simple character consisting of two roughly circular lines of ramparts lying one within the other and composed almost entirely of earth. The inner line is now very much spread and broken, but it appears to have enclosed an area of about 24 feet in diameter [at least 30 feet on the plan]. The outer one is more clearly defined, although much broken upon the west quadrant. At the west there are indications of an entrance 12 feet wide. The fort measures approximately 120 feet by 150 feet over all."

This description virtually coincides with the O.S. map. Removal of bracken revealed the damage, and showed that intensive quarrying had taken place at the outside of the outer bank, leaving many stones lying about. The present-day appearance of the earthwork is shown on the plan, fig. 2. Those features, which are evidently artificial, are given by hatching. The contours are in 1-foot distance, and a grid of 10 m. = 32 feet, repeated on the detailed plans, is laid over the plan. The excavated area is marked by stippling.²

The enclosure is built on a long, narrow, slightly inclined terrace which interrupts the steeper slopes half-way up the southern side of the broad Eden Valley. The valley bottom, roughly 120 feet above sea-level, would be marshy and covered with trees. The slopes, rising to about 620 feet, provide when cleared good pasturage and fertile fields. But no traces of old cultivation (lynchets and the like) are to be seen in the surroundings of the enclosure; if they ever existed, they have been obliterated by modern cultivation. The terrace is well suited for habitation, especially as on it a spring provides good water 200 yards south-west of the enclosure. There is a fine view to the north, west and east. To the south the hills bar the outlook, and from the higher slopes the whole of the earthwork can be overlooked. From this and from the fact that the configuration of the ground provides not the slightest natural protection, it is clear that the name "Fort" as applied to the site is a pure convention.³

The excavation was started in 1946 with trial holes in the vicinity of the

¹ Edinburgh, 1933.

² The level of the 350-foot contour in fig. 1 is taken from the 1-inch O.S. map, and our level is by this only approximate, but sufficiently exact for the purpose of the archaeologist.

³ A more discriminate use of the utterly misleading term "fort" on the O.S. maps is long overdue.

site to get information about the character of the subsoil. Then two trial trenches, 1 and 2 (fig. 4), 1.50 m. wide, were made crosswise through the outer bank, through the supposed entrance in the west, and through the middle of the inner circle. Then followed the uncovering of the southern part of the central area. In 1947 the northern part of the central area was

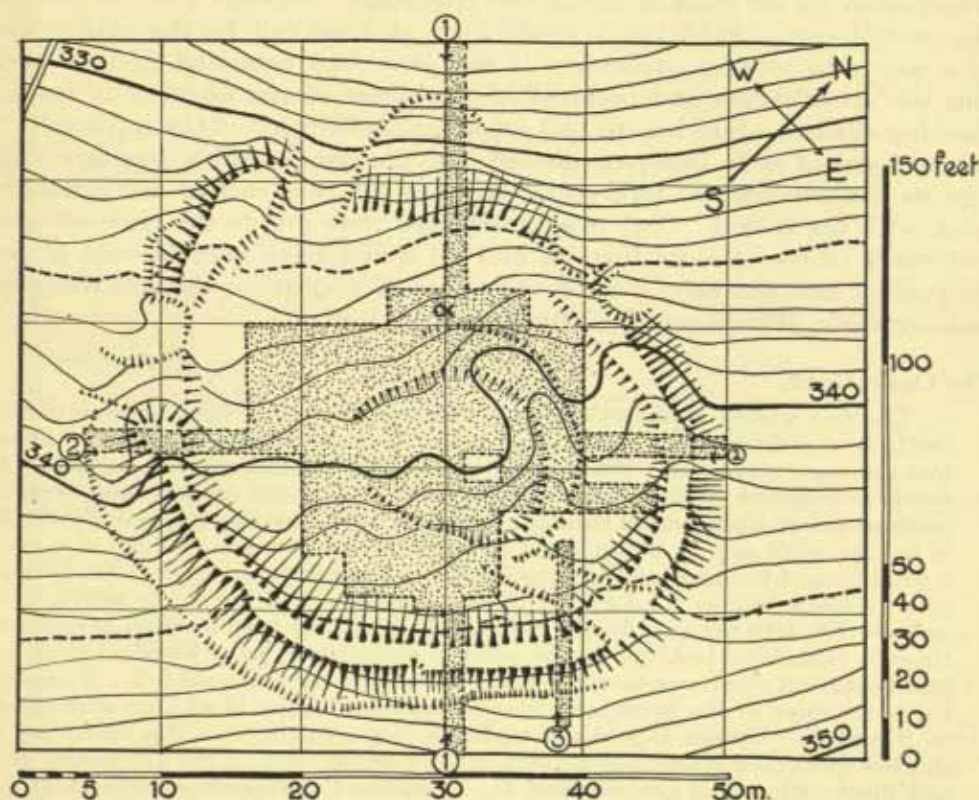


Fig. 2. Plan of Scotstarvit with 1-foot contours, excavated area, and position of sections surveyed 1946 by Dr Maria Bersu.

investigated, and for demonstration at an excursion of the British Association the southern outer bank was cut again. Altogether four weeks' digging was spent on the site. Voluntary labour only was used.

The work was made easy by no deep layers having to be removed. The forest humus is now replaced by a black modern humus, there is practically no habitation layer, and the surface prior to the occupation of the site is only preserved under the bank and elsewhere on short stretches. The untouched subsoil and depressions due to vanished structures are practically everywhere reached directly after the removal of the modern humus. The

subsoil is either (1) a harder, pale sandy material, the decayed local calciferous sandstone of Carboniferous Age without any foreign material, but with occasional blocks of sandstone, worked up and moved by drift in glacial times; or (2) a looser, fine, somewhat more yellowish sand, also a glacial formation with many foreign stones and occasional big boulders, transported by ice from as far as the Highlands. Subsoil 1 is confined to the central area. Both types would form an ideal soil for the excavation of a site with wooden structures if the place had remained undisturbed. But the disturbances and removal of the higher strata, alterations due to leaching of the modern humus and secondary infiltration of the top levels of the untouched soil, iron-pan deposits in the sand, rabbit burrows and curious disturbances by fern roots, necessitated very careful and tiresome work with the trowel. Any results obtained were due to the patience and endurance of the student helpers, and all would have been in vain if the excavation had not been started at a time of year when the soil was wet and the slight differences in colour showed up well.

The Outer Bank.

The five widely separated sections through the outer bank show uniform features, and from this we can deduce that the construction of the outer bank was the same all round. But we got only incomplete information as the bank nowhere remains undisturbed. In fig. 3, 1, 2, 3, are shown four typical sections cut at right angles through the outer bank (southern side and middle of eastern side) and an oblique one through the western side. They also give a good idea of the present day appearance of the low broad bank. Under the modern black humus A an upcast of clear white sand B lies in the north, east and south. (On the west in our cutting the bank has been levelled in modern times.) The false bedding in the sand B shows it to have been piled up in small loads on what was then the turf line, a light brownish sand C. Towards the outer slope of the bank some stones and some bigger blocks are embedded in B and C. Upcast B and old turf line C are further out dug away by a shallow ditch-like depression E, with a flat bottom sunk in the untouched soil and filled with mixed greyish sand D. Turf line C reappears again outside E. In the south of the enclosure a shallow depression on the site of E is visible on the surface; it looks like a silted-up ditch outside the bank, and is neither mentioned in the *Inventory* nor marked on the older 25-inch map. Variations are that in the east (fig. 3, 2) the upcast B is mixed with darker layers of soil B 1, with occasional remains of charcoal and some minute fragments of cremated bones. Very little of C has remained here. In the south-east (fig. 3, 3), covering B on the inner slope, there is a layer of yellower soil B 3, resembling C, and overlying it greyish sand B 4. It looks as if B 3 indicates a surface with vegetation. Towards the outside of the bank, upcast B has either been heightened secondarily or was originally higher, and has been in part washed down towards the inside after B 3 had grown up. In the cutting through the northern side of the enclosure (fig. 3, 1) no surface indications of the bank are left. The position of an outer face D 1 is given by the remains of a packing of heavy stones set at a deeper level than turf line C, which, despite rabbit burrows, is here recognisably steeper than on the south. The

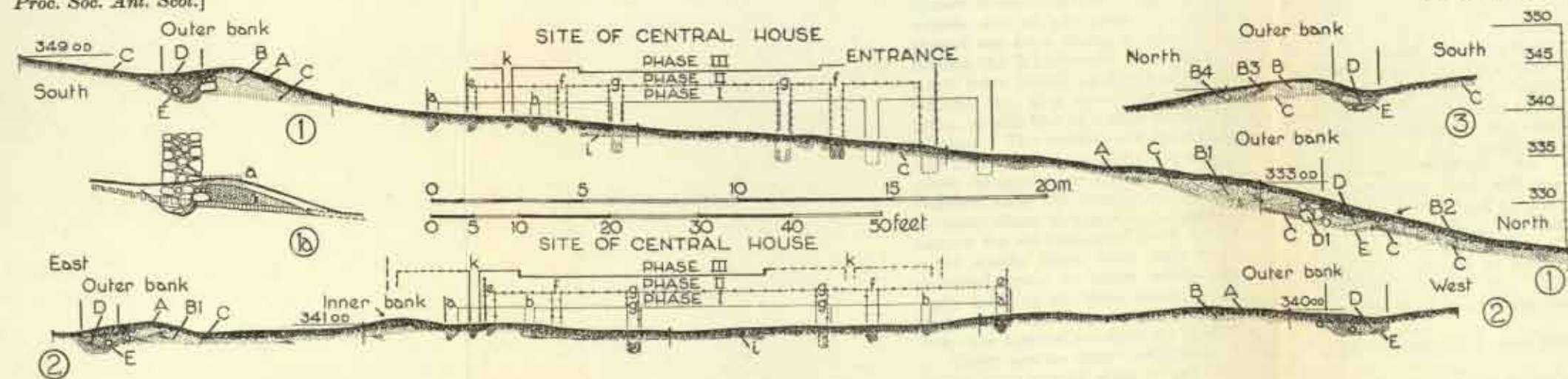


Fig. 3. Sections through fort (see fig. 2).

GERHARD BERSU

[To face p. 244.]

face thus forms the revetment of a kind of terrace, and outside it layer D indicates a depression E as on the south. The brownish sand B 2 further out was deposited as downwash from the bank inside, now represented only by the broad upcast B 1 before the upper part of the stone face D 1 had vanished; and it is obvious that much material has been washed away since then.

Some bits of china found in the filling D in both southern cuttings date it to modern times, so E is clearly a robber trench; and the stones embedded in upcast B and turf line C are the last remains of the outer stone face of an earthen bank. Yet it is unlikely that the people who robbed the stone face dug much deeper than the lowest course of the facing, and as further the dimensions and outline of E are everywhere the same, this depression with its flat bottom sunk to one foot deep in the untouched soil must also be an original foundation trench for the heavy blocks of the facing. This implies that the enclosure bank was quite solidly built, but not enough is left to show how high this face had been originally. Even in the present reduced state the upcast B contains more material than was gained by digging the foundation trench, and so was more than incidental but had a specific function. It was spread out to a width of 10 feet, and piled up to a height of at least 3 feet behind the 2-foot-wide stone face. No traces of a stone or wood inner revetment were found, so there is no reason to deduce a defensive purpose in the nature, say, of a raised rampart walk (upcast) behind a stone parapet (stone face), or still less of a high bank with vertical inner and outer face and a filling of sand. The evidence of section 3, fig. 3, layer B 3, indicates that the upcast was indeed piled up obliquely against the dry wall face, presumably to give it more strength and solidity than the revetment alone could provide. As the builders took the trouble to collect such heavy blocks as those still preserved, to carry them to the site, to scoop out a foundation trench and to pile up the upcast for an enclosure bank of about 300 feet circumference, the stone face must surely have been high enough to provide adequate shelter for the enclosed area; in other words, the bank would be as high as modern field walls fulfilling the same function to-day, *i.e.* 7 to 8 feet (fig. 3, 1 a). It remains to be seen what other clues we get for a reconstruction of the enclosure bank from the type of occupation inside it.

There are no clear indications that the bank was repaired, and none that it had been moved after it had been built.

Nothing can be said about the construction of the entrance. Our cutting on the west, where, according to the *Inventory*, surface indications of one existed, showed that the foundation trench was continuous here (cut obliquely, fig. 3, 2, west). A modern but disused field road crossing the enclosure (fig. 2) has, on the east, worn down the bank and given a false impression. (For the most likely place for an entrance see below, p. 255.)

The Enclosed Area.

The area enclosed by the outer bank measures about 1800 square feet. It slopes down less from south to north than the ground outside, which suggests either that a less inclined part of the terrace was chosen for the enclosure or that it was levelled. If in the section fig. 3, 1, we connect the stretches where the old surface is still preserved, we see that on the south the turf line C has been dug away, whereas on the north sand B 1 is heaped

on it. But most of the material which was used for levelling the area has been washed down.¹

Interpretation of the surface indications (fig. 1) led to the conclusion that the bank in the middle of the enclosure was a "hut-circle" whose outline would give the dimensions of the only structure on a site of no complex character. It turned out—as so often—that surface evidence is not of much value for the assessment of details; surface indications provide only general and minimum information about what has actually been built. The two first cross-cuttings through the enclosed area showed at once that two kinds of deposit below the humus A filled depressions in the untouched subsoil, one dark and almost black, the other light brown. This difference in colour suggested that they were not contemporary. The "hut-circle" seemed to have no relation to what were clearly post-holes and foundation trenches filled with the light brown soil. This suggested remains of another building not concentric with the earthen bank. The evidence of the cutting through the latter was disappointing, in so far as no structural remains related to the bank itself were to be seen in the level of the untouched subsoil. The remains of the bank consisted of light brownish sand, heaped upon untouched soil (fig. 3, 2), with no indications of ever having had a stone facing. The stones scattered on the surface were therefore certainly not used in the construction of this bank, like those orthostats or dry-stone wall faces so often a characteristic feature of a "hut-circle." Indeed it early became clear that we were dealing with remains of circular structures built essentially of wood, which is rather surprising in a district where stones are easily obtainable. By uncovering the whole central area the post-holes, foundation trenches, and the remains of the inner bank fell into a distinct pattern, and lines interrupted in our narrow cuttings by secondary changes in the subsoil or by the fern roots could be seen to be really continuous. As the foundation trenches sometimes crossed they could not all be contemporary, and as some were concentric or eccentric to each other, it was possible to establish a sequence of three different systems of structural remains indicating consecutive wooden buildings. The arrangement of the post-holes, and differences in character and colour of their filling, corroborated the evidence provided by the foundation trenches.

The Circular Building in the Central Area.

Fig. 4 gives the plan of the excavated area at the level of the untouched soil; discolorations are shown by stippling; depressions in it by lines and hatching, set stones are marked. The difference in shade of the post-hole fillings is also given. Fig. 5 shows how these remains are to be assigned to the three consecutive wooden buildings of respectable size.

¹ But there was not such prominent terracing for the site of the central building as is to be seen on the "concentric circle" sites of North-west Wales (*Antiquity*, vol. xviii. (1944), p. 194).

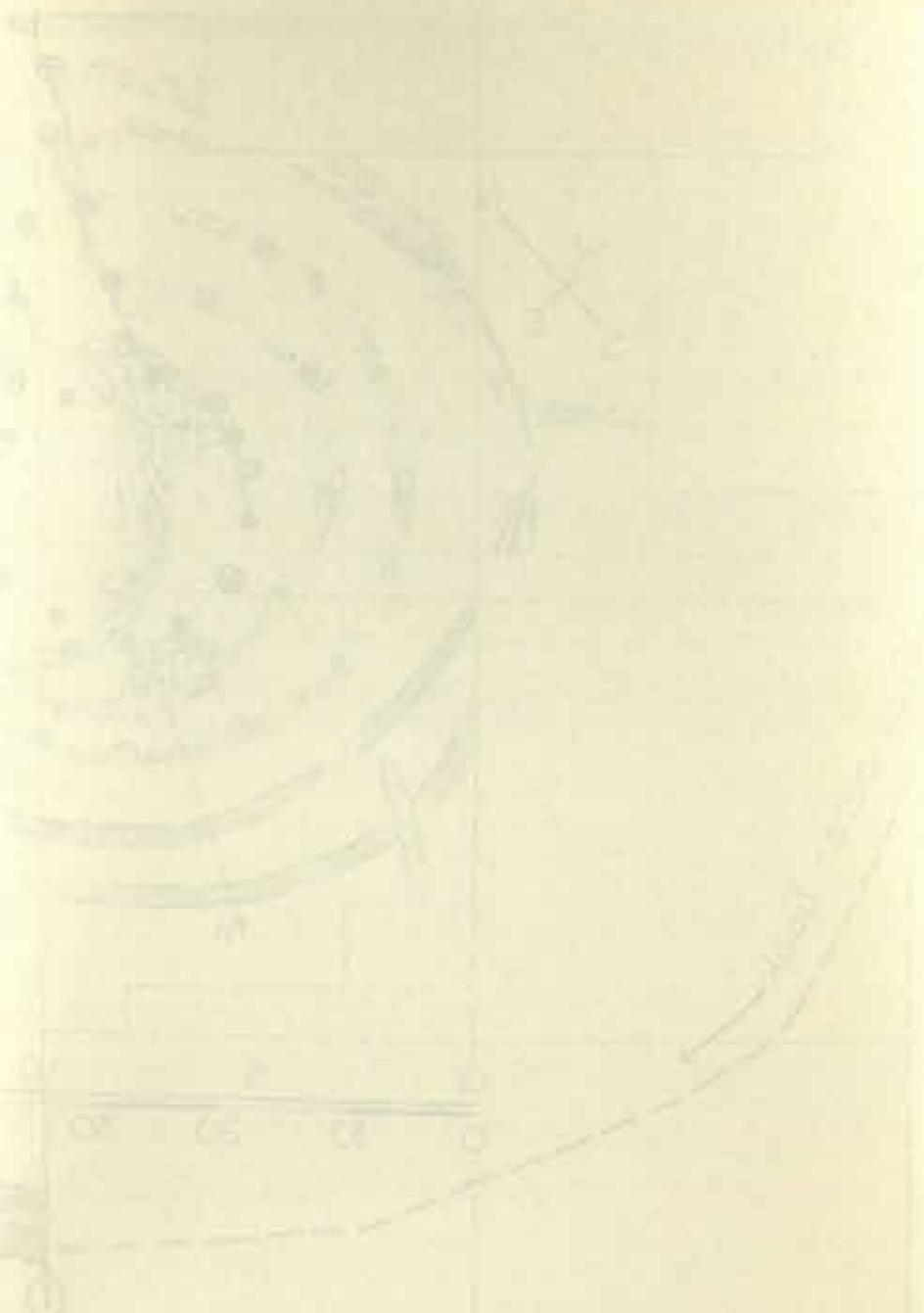


Fig. 1. A series of curves showing the effect of varying the parameter k on the function $y = x^2 + kx + 1$.

Fig. 2. A series of curves showing the effect of varying the parameter k on the function $y = x^2 + kx + 1$.



Fig. 3. A series of curves showing the effect of varying the parameter k on the function $y = x^2 + kx + 1$.

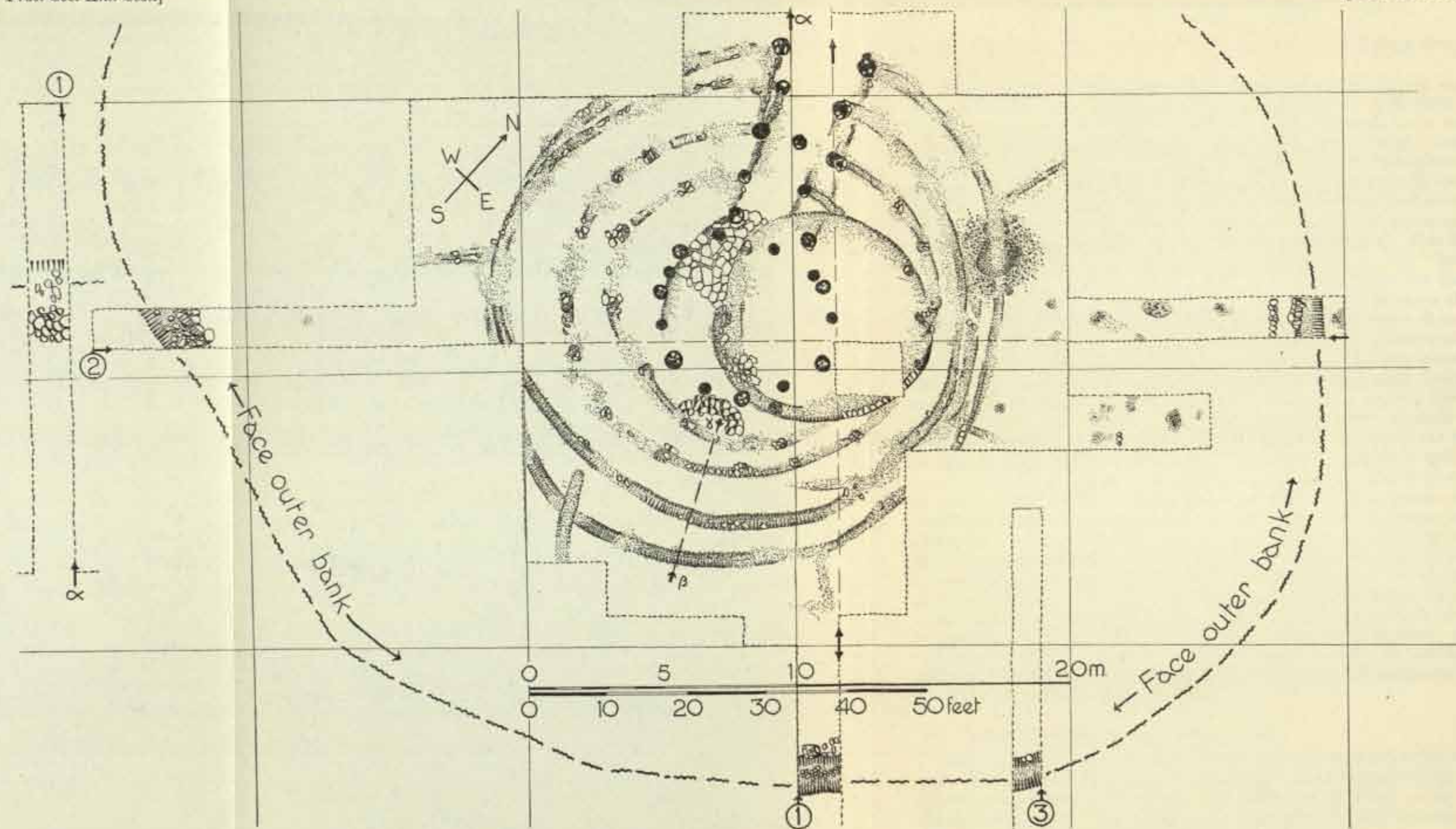


Fig. 4. Plan of excavated area. (For section β - γ see fig. 8; for sections 1-1, 2-2, 3, see fig. 3.)

As all three were built roughly on the same spot, each reconstruction was only a stage during a continuous occupation of the site. The buildings were completely rebuilt in each phase, but it looks as if Phase II was effected by gradually dismantling the structural parts of Phase I, whereas the ground

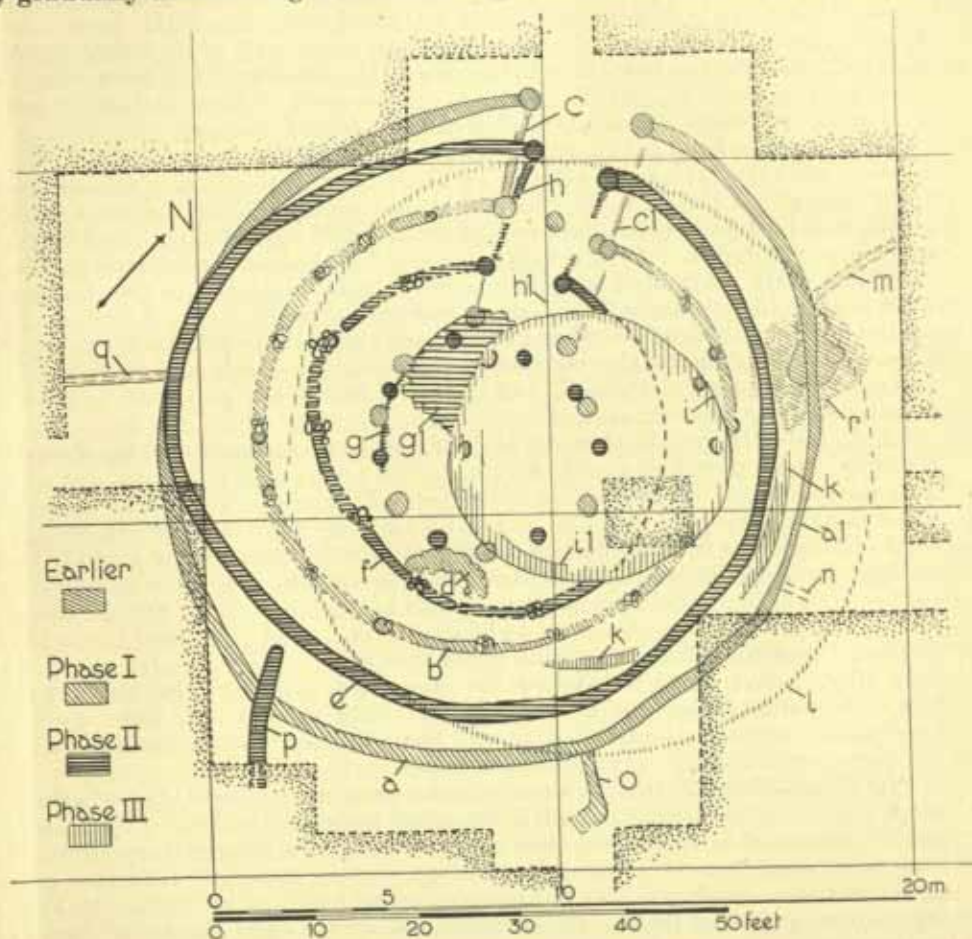


Fig. 5. Diagram of structural remains in central area.

plan suggests that the building of Phase II had been pulled down completely before that of Phase III was erected. The following gives the evidence upon which the above sequence is based.

Phase I.—In plan the building consists of four elements:

I, 1. Outer Ring.—A circular foundation trench (*a*, fig. 5), 19 m. in diameter, indicates the site of a continuous outer wall of wooden posts. Where best preserved the trench is 30 cm. wide and cut 30 cm. into the untouched soil. Its section (β - γ , fig. 8) is roughly V-shaped, but the outer edge is distinctly

vertical and the inner sloping at almost 45°. The filling is uniformly light brown, and very few packing-stones were found. On the north there is a gap, 3 m. wide, and the trench ends at each side of it in a substantial post-hole sunk 50 cm. deeper. These, like all the others mentioned later, are vertical and filled with packing-stones, which in most cases lost their original position when the wooden post decayed. Both are filled with soil of the same colour as the trench. This outer ring (*a*) cut in the north-east older black deposits (see p. 255). On the east, at *a* 1, it looks as if a stretch of the outer ring had once been replaced (repaired), for there on a stretch of 4 m., instead of being V-shaped, it forms a narrow U and is cut 5 to 10 cm. deeper.

I, 2. Middle Ring.—Concentric and 3 m. within the outer ring¹ runs a band of soil (*b*) of the same colour. When removed, this brown soil was seen to be sometimes the filling of another, U-shaped, trench (fig. 8 gives a section where it is best preserved), but sometimes it faded out, hinting at an original unevenness in depth. At intervals averaging 3 m. there were isolated packings of stones flatly embedded in the untouched soil, associated in five instances with shallow depressions 15 cm. deep resembling post-holes. A definite gap on the north corresponds to that in the outer ring, and is flanked by two post-holes corresponding to the outer two in situation, depth and colour. The eastern hole was once replaced, and in the middle of the gap there is another post-hole of the same dimensions.

I, 3. Inner Ring.—Within the middle ring in turn, again at 3 m. distance, there are eight post-holes sunk 30 cm. in the untouched soil, arranged in an irregularly spaced circle 8 m. in diameter. Two are in a straight line with those flanking the gaps in 1 and 2, and all had the same light brown filling.

I, 4. Entrance Hall.—Shallow narrow foundation trenches, *c* and *c*1, with upright set packing-stones or, where badly preserved, a depression line only, connect the flanking post-holes with the two in the inner ring. On the eastern side of *c*1 a short stretch forming a channel 20 cm. deep continued towards II, 2, then, being cut into by the sunk inner area of Phase III (see below), it was only 10 cm. deep until it reached the innermost gap. On the western side the corresponding part of *c* could not be fully ascertained, but coincided presumably with the foundation of *c*. The evidence was further blurred by the pavement, and we may have overlooked it.

To Phase I belongs further a semicircular packing of stones (*d*) set in clayey sand, placed on the untouched soil in the south between 3 and 4. This packing, partly preserved in two layers, has survived only in a fragmentary state. It may have once formed a full circle, but no certain explanation can be given of its purpose—perhaps it is the remains of an oven, as stones in the upper layer show marks of fire on the outside, and as the sand inside the arc was reddened.

A diagrammatic plan of the building in Phase I is given in fig. 6.

Phase II.—With the exception of the post-holes of the inner circle, the features of Phase II show no difference in colour of filling compared with Phase I.

II, 1. Outer Ring.—The foundation trench of the outer ring *e* coincides on the west with that of Phase I, then to north and south it runs between I, 1 and I, 2. As II, 1 is cut deeper into the untouched soil than I, 1 and is constant

¹ The terms "concentric" and "circular" are not used in the geometrical sense. The outline of our circles deviates in all three phases somewhat from a true circle in the east, where they are cut into the sloping surface of the ground, whereas the term "concentric" fits somewhat better, as 1, 2, 3 retain the same centre in I and II.

in depth, the relative age of both features is given. On the south a number of packing-stones have survived (fig. 8, section β - γ). The gap on the north was narrowed to 2.50 m., but remained at the same place, again flanked by two post-holes 30 cm. deep. The diameter of the outer ring was less than before, 16 m.

II, 2. Middle Ring.—The asymmetry of the middle ring *f* is still stronger than in Phase I: distance from the outer ring on the east 3.50 m., on the west 2.50 m. Here again it remains doubtful if there was a continuous deep foundation trench. The section is U-shaped (fig. 8), and in detail *f* shows the same features as *b*. There are packings of stones at regular 3 m. distances: at five of these packings are shallow depressions of 15 cm. maximum depth like remains of post-holes, and the gap in the north is flanked again by two deep (30 cm.) post-holes.

II, 3. Inner Ring.—The 5-m. ring of eight posts *g*, 1.50 m. distant from 2, is on the same perimeter as I, 3. The post-holes lie in the intervals between those of I, 3; they are smaller in diameter, filled with darker greyish-brown soil mixed with some charcoal, and are neatly cut with vertical sides and flat bottom 50 cm. down in the hard calciferous sand. There were no packing-stones so it looks as if the diameter of these holes corresponds to the dimensions of the timber which was set in them. Once more two of the holes were in a straight line with the outer flanking posts. On the north-west a slight depression indicated that the area surrounded by II, 3 was sunk. In it were the remains of a carefully laid pavement *g1* of flat stones, whose surface was 10 cm. deeper than the level between II, 1 and II, 2. The pavement covered over one post-hole of I, 3.

II, 4. Entrance Hall.—The outer flanking post-holes were again connected by a narrow foundation trench, *h*, *h1*. If the stones at the edge of pavement *g* were still in position, it looks as if the pavement of II, 3 continued at the same level into the entrance.

The scheme of II is given in fig. 7, on the same scale as that of I; the type of the building remained the same.

Phase III.—The little that remained of the structure of the third building justifies the interpretation that it was again of the same type.

III, 3. Inner Ring.—The best preserved part of Phase III is a level circular area *i*, 8 m. across, sunk in the untouched soil, 15 cm. in the south and 5 cm. in the north, the difference being due to the original slope. The surface is smooth and hard, with charcoal and minute splinters of calcined bones trodden in. Round the southern edge a shallow foundation trench *i1* is preserved for a length of 2 m., with a shallow post-hole 15 cm. in depth. Four other post-holes of similar dimensions are preserved at the western and eastern edges. There is further a carefully laid pavement at the southern edge preserved in one row of flat stones, and remains of a similar broader pavement in the south-west. The centre of this circular area is 3 m. to the east of the centre of I, 3 and II, 3, and we see it as the element III, 3 corresponding to them. Post-holes and foundation trench would have the same function as the ring of posts in I, 3 and II, 3. The relative age is given by the fact that III, 3 cut away parts of II, 2 on the west, and also the pavement in II, 3 which lay 10 cm. higher.

III 2. Middle Ring. III, 1. Outer Ring.—On the east, remains of a shallow foundation trench *k* ran concentric with the circular area III, 3 at a distance of 2 to 3 m. It could be the last vestige of the outer wall of a building much smaller than the others, but we prefer to interpret it as element 2 of building III for the following reason. If we consider the position of the

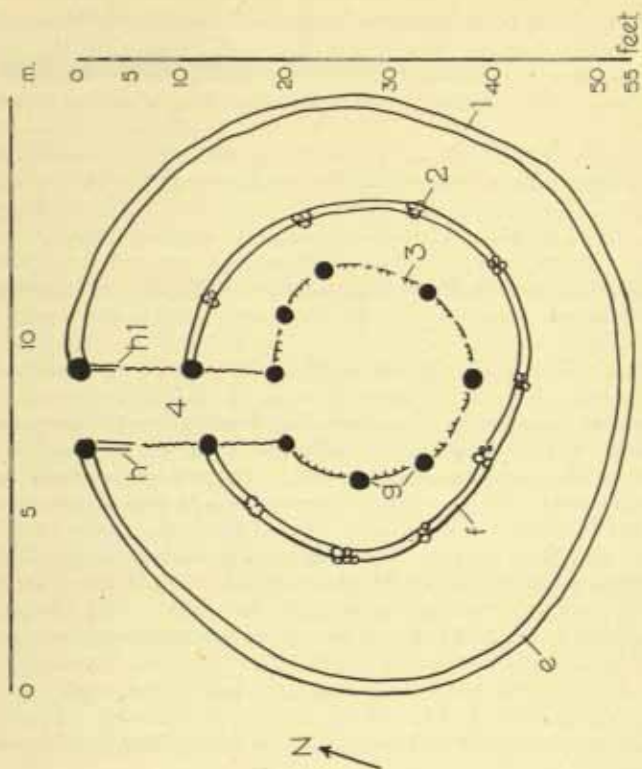


Fig. 7. Central house, Phase II.

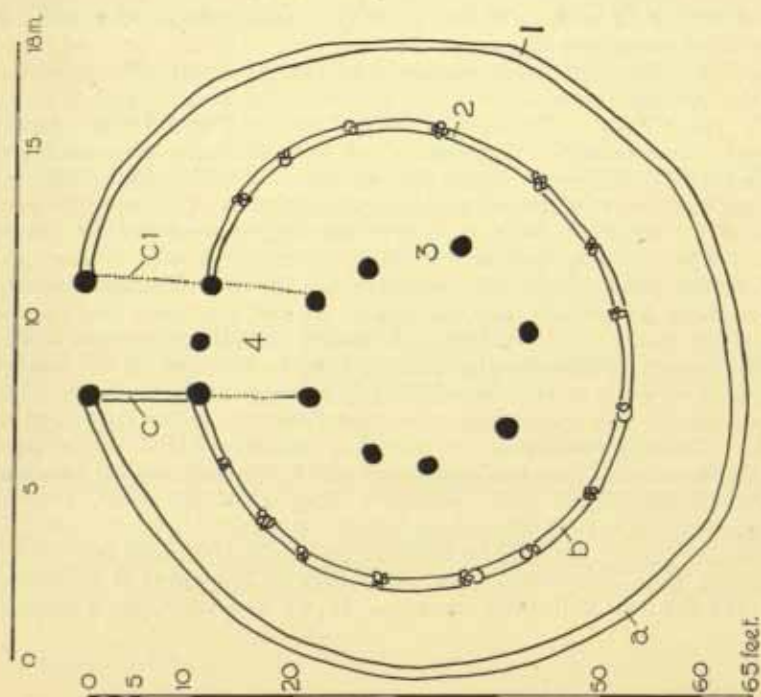


Fig. 8. Central house, Phase I.

earthen bank of the "hut-circle," we see that its remains are completely eccentric to the outer ring and inner ring of I and II, but concentric with trench *k*, which is 2 to 3 m. inside it. (It is 3 m. wide at the base, and its highest point is marked *l* on fig. 5.) So we see in it an indication for an element III, 1 which has left no traces in the untouched soil, but corresponds to the outer circle of the buildings in Phases I and II (see p. 253).

Building III would then have had roughly the same diameter as I and II (16 m.). From its position in relation to them it is obvious that, if a similar earthen bank was associated with either, it had to be removed when the centre was moved 3 m. to the east in Phase III.

III, 4. Entrance Hall.—Unfortunately nothing remained of the entrance either on the north or on the east. If the entrance was again flanked by post-holes it certainly did not lie on the west, as the gap in the inner circle in the plan, fig. 1, suggests, for nothing was there found which could be interpreted as remains of them or of their packing-stones. On the north there were, apparently simply embedded in the modern black humus, packings of stones in the area of the earlier entrances; they might conceivably have been connected with the structure of the entrance in III, but as they were superficial we did not plan them before they were removed.

The reason why so little is left of the buildings is clear if we look at the N.-S. and E.-W. sections through the central area (fig. 3, 1, 2). We see that with the exception of the sunk area III, 3 and the remains of the pavement in II, 3, nothing of the floor of the buildings has survived. Even the level of the untouched soil has been affected by modern disturbances and by the modern secondary humus A. In the entrance area some of the old surface C has survived between I, 1 and II, 1 (fig. 3, 1), which could not have happened if the level of the entrance had been deeper than the old surface C.

We had already seen (p. 245) that there are indications that in the northern part of the central area earth (B 1, B 2) had been originally piled up to level it, and during habitation in Phases I and II. The difference of almost 1.5 m. in level between the southern and northern sides of foundation trench I, 1 (*a*) shows that this upcast must have been quite considerable, which explains why so little of the structure of III has remained: for inside the building the foundations of that phase did not reach the natural soil. The section through the northern part of the bank shows that material from the inside (B 1) had been washed down before the face of the northern bank had been robbed, and still more (B 2) went when the northern outer bank was levelled.

Other Structures Connected with the Building (fig. 5).

In the area uncovered there are outside the circles of the foundation trenches five trenches *m*, *n*, *o*, *p*, *q*, all U-shaped in section. They have the same filling as the foundation trenches of the buildings and all end near element 1 of the different phases, which they meet roughly at right angles. One, *o*, a very shallow trench on the south, seems to turn through a right angle and then fades out. The others stretch into the unexcavated area. First we thought that these depressions were water runnels or drip channels made by water from the roof of the building. But this cannot be the case, as they run partly against the natural slope. They must be structural features belonging to the different phases of the building—*m* and *o* certainly to I, *p* to II, *q* probably to II and *n* earlier than III. If they are foundation trenches for continuous rows of timbers, the lay-out excludes their

taking walls of buildings attached to the circular building, and they look like foundation trenches for fences.

Reconstruction of the Buildings.

We see in 1 (outer ring of a phase) the outer wall of the building, and assume that all the area inside it was roofed over. No traces of individual posts were seen in the trench, nor were short stretches of the circuit dug deeper than the rest. As no packing-stones were used, the timbers, almost 30 cm. thick, had been set without intervals and formed a solid continuous



Fig. 8. Section through outer and middle rings of circular building in central area. Phase I and II (see fig. 4).

wall. As the trench is vertical on the outside and cut in the hard untouched soil, this wall was deliberately built to resist a thrust acting from the inside of the circle, *i.e.* it was able to withstand the outward thrust of the weight of the roof. In foundation trench 2 (middle ring), packing-stones originally all associated with post-holes were set at regular intervals. These post-holes show where isolated vertical posts stood in a circle, forming roof supports; as their function was only to prop up the rafters bridging the span of the roof, the holes are shallow. The foundation trench between these post-holes in 2 is shallower than 1. It is badly preserved, but there was in any case a partition here. This partition will, in parts at least, have formed a solid continuous high wall, namely, where we found a U-shaped foundation trench. We do not know if a light partition reached the roof all round. The deep-set posts of the inner ring 3 in I and II are again roof supports, and could carry a substantial weight even if they were quite high. Only a few posts at the edge of III, 3 have survived, but we assume that there was once a full ring of them also. The shallow foundation trench (i1), which likewise survived only in part, indicates a partition along the edge of III, 3—an assumption which gets support from the fact that a sharp vertical edge of that inner area is preserved. Similarly, there was a partition or revetment along the edge of the sunken area II, 2, for a sharp edge is preserved to a higher level than the pavement there.

On both sides of the entrance hall (4) narrow foundation trenches indicate partition walls, but we do not know if they reached the roof. The strong post-holes at the end of rings 1, 2 and 3 suggest that the hall was roofed. But as the areas between 1 and 2 and 2 and 3 would not be accessible if the partitions were high, these may have been at least in parts only low revet-

ments. We do not know where the door was situated, no threshold for example being recognisable, though the deep post-hole in the middle of the gap in I, 2 (fig. 6) may indicate that the door was recessed so that a kind of porch was formed between 1 and 2. The size and intervals of the post-holes, and the arrangement of the foundation trenches, are adequate for supporting rafters on which a sod roof could be placed, but hardly adequate for a thatched roof.¹ At least the area inside 3 was paved in Phases II and III, and this area was lower than the two outer zones. No drains exist inside 1, so that the rain-water was carried over the roof to outside 1; but no drip channels are to be seen, again an indication how much the soil has been worn down by the disturbances and how many details have gone. As so little of the floor inside the buildings is preserved, it is difficult to carry the deductions for a reconstruction of the building further from the evidence of our excavation alone.

It remains still to discuss how the earthen bank of the inner circle, which we consider as a feature associated with the wall in Phase III, fits into the reconstruction. We know from other circular buildings that such banks may be the remains of two different features: A. The bank represents upcast piled against the outer wall to function as a kind of buttress.² B. It is generally assumed that the low banks of hut-circles are the remains of walls originally much higher, with stone or wood revetments outside and in; the bank's function is to support the rafters laid upon this broad outer wall. We saw that no traces of a revetment (for B) or a foundation trench (for A) have survived in III, and that if an upcast had existed in I and II it could not have been preserved (above p. 251). If we venture at all to approach in these circumstances the problem of the earthen bank, it is because the discussion may be helpful for the interpretation of the evidence at better preserved sites. We have already dismissed the conception that the U-shaped foundation trench *k* of Phase III was for the outer wall of a much smaller building, and the earthen bank is too far away from *k* to function as an upcast against it. On the other hand, as the hypothetical outer wall of Phase III cannot have been more than 4 m. from a middle wall *k* (otherwise it would raise difficult structural problems with regard to bridging the span of the roof), the position of the earthen bank indicates that it was *between* the hypothetical outer wall (1) and the middle wall (2, *k*). So it seems more likely that the earthen bank had function B. If we are right in thinking that the buildings in Phases I, II and III are identical in type, a similar earthen bank would have been part of building I and II also. Were the

¹ For thatch as roof-cover see the theoretical discussions in "Excavations at Little Woodbury," *P.P.S.*, vol. vi. (1940), p. 88. Further experience has now induced the author to assume that the house at Little Woodbury had a roof covered with sods (*Antiquity*, vol. xx. (1946), p. 81).

² Cf. Lissac, *Ulster Journal of Archaeology*, vol. x. (1947), p. 30; vol. xi. (1948), p. 131. Cf. Ballacagen, *Journal of the Manx Museum*, vol. v. (1945-46), pp. 177-182.

banks in I and II also loose sand as in III, such loose sand would need an inner and outer revetment. 1 and 2 in I and II would serve for a revetment very well, taking timbers strong enough to retain a bank of considerable height. I, 1 and II, 1 are even too strong for such a purpose, for such massive outer walls can in no case have been higher than 1.5 or 2 m., as otherwise a building 19 m. across would have had too high a roof. Apart from this, however, the distance of 3 to 4 m. between 1 and 2 is out of all proportion for the width of a bank of function B, and a high wall of this breadth would have left, after the decay of the revetment, much more remains than are shown in fig. 1. So we think that the earthen bank was originally an upcast

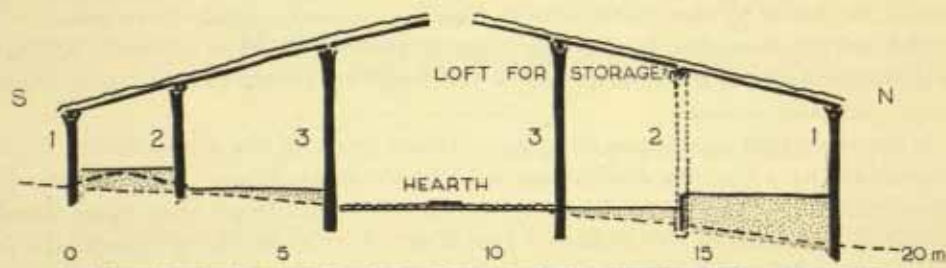


Fig. 9. Scheme of reconstruction for central house.

to raise the level of the area between 1 and 2 to 50-60 cm. compared to the level of 1 outside the house and 70 cm. compared to the level inside 2. Such an arrangement would allow benches or beds in the zone near the outer wall, and would serve to keep the inside of the house dry, for we saw that the centre was sunk. If we are right in this reconstruction, the roofed-in area would consist of three rings at different levels: (a) raised bench between 1 and 2, (b) space between 2 and 3 more or less level with ground outside 1, (c) area inside 3 sunk in the ground. To reach the sunk area the entrance would need lateral revetments, such as are preserved in I and II (foundation trench c, h). The partitions along 2 and 3 fulfilled the function of revetments whether they reached the roof or whether only to the highest level of the floor inside the house.

In fig. 9 a reconstruction is tried in a N.-S. section through the building, and on the left the timber in trench 2 is drawn as such a revetment. The dimensions are based on those of Phase I. The reconstruction takes into account the special conditions arising from the sloping ground. The reconstruction also gives probable vertical dimensions. Comparison with the remains of the outer bank in fig. 3 shows how disproportionately much material is missing if the earthen bank had been 5 feet high and had fulfilled function B.¹ It shows also how disproportionately thick such an outer

¹ The width of an earthen bank between 1 and 2 interpreted in a reconstruction on the lines of B would lead logically to the idea that the Scotstarvit house was a kind of "wooden" broch or dun. The

wall would be. So the earthen bank will represent here another function than A or B; in other words, we will have to see if the earthen banks of "hut-circles" also have not sometimes other functions than generally assumed for them.

As the buildings I and II have an entrance opening to the north, the entrance to the enclosure will have been most likely on the north also, on the axis of the entrance hall. But we had no time to uncover this area.

The evidence of the soil gives no clue to the purpose of the buildings. The buildings and enclosure are later than the remains discussed in the next paragraph.

Older Remains.

As already mentioned above, I, 1 (a) and I, 2 (e) are cut in the east into older deposits (r, fig. 5). One of these, marked with small crosses in fig. 4, is a hearth, a shallow depression 15 cm. deep in the untouched soil, and filled with ashes, dark soil, and small fragments of red burnt clay. No hearthstones were found, but reddening of the subsoil indicates quite intensive firing. To the west of the hearth lie two shallow pits (respectively 15 and 20 cm. deep) filled with dark, somewhat unctuous soil. The same blackish soil, quite distinct both from the filling of the foundation trench and post-holes and from the modern black humus, lies in a thin stratum surrounding the pits and hearth and peters out further away from them. Indistinct spots of the same layer were found further east in sandy subsoil in an area much disturbed by rabbits, and filling the burrows to a considerable depth, 40 cm., thus indicating it must have been quite widely spread there and thick. This material is to be found in the upcast B 1 (fig. 3, 2) of the enclosure bank on the east, but in a secondary position apparently collected from its original deposit in the neighbourhood. Traces were also found there under the bank itself in a small hollow (post-hole?) in the untouched soil, and in another just outside the enclosure face. No remains of it were found in the western part of the enclosure. So the occupation in this earlier period seems to be confined to the eastern part and spreads possibly even beyond it.

The Finds.

Finds were scarce, as almost always on such habitation sites in Scotland. There are, first, some minute fragments of pottery, and I am obliged to

author had indeed in mind the possibility of such an interpretation when, after the 1946 campaign only parts of the southern half of the house had been uncovered (see Sir Lindsay Scott, *P.P.S.*, vol. xiii. (1947), p. 27, and note 3). But the uncovering of the whole house, as also Sir Lindsay Scott's detailed studies "On the Problems of the Brochs" (*ibid.*, pp. 1-36), have induced the author to see in the Scotstarvit house a type closely connected with the Little Woodbury house and the variations (see below, p. 259) of the aisled round-house.

R. B. K. Stevenson for his report on the pottery as on the worked flints and pitchstone (here printed as Appendix I). A. D. MacGregor (Geological Survey of Great Britain, Edinburgh) kindly investigated the pitchstone petrographically (Appendix II). Expert opinion was also kindly provided by Miss M. I. Platt, of the Royal Scottish Museum, on the small fragments of cremated bones which represent all that is left in the acid soil from food-waste. She says: "I do not consider that the cremated fragments of bone are human, but what exactly they are it would be difficult to say. As a guess only I would say they belong to sheep." M. Y. Orr (Royal Botanic Garden, Edinburgh) has reported on the charcoal remains, and states that among the material submitted to him are 49 pieces of oak charcoal with 4 small fragments of willow.

Date.

Scarce as the remains are, the two periods of occupation can be dated by them. One group of the pottery is dated by the food-vessel fragment and the pitchstone flakes to the Bronze Age, the other group to the Iron Age. The date, early centuries A.D., suggested by Stevenson from the affinities of the second group with the native pottery of Traprain Law can, I think, be narrowed down. If the site had been occupied during the Roman occupation we should have found Roman pottery, as it is quite common on native sites, even outside the occupied area. If the "native ware" and the earlier prehistoric pottery survived the climatic conditions, the much better fired Roman pottery would have survived also if it had ever reached the site. We have moved enough material on the site to use the negative evidence of the lack of Roman import for dating purposes: Scotstarvit lies in an easily accessible position not far from main lines of communication. This makes a date either before Roman influence penetrated into Fife, or after the Roman occupation of Britain more likely. And between these two alternatives, before the middle of the first century A.D. or after A.D. 400, preference should be given to the earlier date. For even if native pottery of the Traprain Law type was still used after A.D. 400, Roman imports still lingered on in native sites after this date.

Summary and Conclusions.

1. Not much can be said about the occupation in the first period, as we uncovered only the western part of a probably larger inhabited area stretching beyond our excavation. Hearth as well as hollows, charcoal and calcined bones, are definite indications of a habitation site, and it was an open settlement. There are no indications that it was a burial site. We have no remains of permanent structures or houses, but the dark-coloured deposits are spread over too big an area to have been produced by a temporary

occupation round one hearth only. The evidence of the rabbit-holes, which suggests that there was once a considerable habitation layer, makes more likely a fairly intensive occupation over a considerable time than a short occupation over a considerable area with several fireplaces. As so far no other habitation sites of the food-vessel culture are known from Scotland, it is a pity that no time was left to follow up this matter. The main importance of this chance discovery is that we know now in what situation their open settlements may be found; they should be fairly common in Fife in view of the many burials known.¹ Another point of interest is the pitchstone imported from the west of Scotland to this settlement (see Appendix II).

2. Our enclosure is hardly contemporary with the small but strongly fortified multivallate hillfort of contour type which lies on the same level and on the same terrace as our enclosure 600 yards to the east of it. It is listed in the *Inventory*² as Our Lady's Wood Fort, No. 166. No finds are known from it, but this type is regarded as being of Iron Age date. Though the fort can also be overlooked from the higher slope, it has been built on a natural defensive site. A steep valley running at right angles to the axis of the Eden Valley dissects a spur from the terrace. The outline of the fort is defined by a bank girding the plateau, and two banks and three ditches (each at the outside of each bank) following one after the other without interval. This fort situated so near to our site underlines by its carefully chosen position the unmilitary character of our enclosure, and shows what kind of position was chosen if one intended to build in this area a site of a defensive character. So peaceful conditions existed when Scotstarvit was, as we think, built about or shortly before the beginning of the first century A.D. These conditions persisted for some time, as the wooden building inside Scotstarvit was reconstructed twice. As there were no indications that these reconstructions during a continuous occupation became necessary for other reasons (*e.g.* fire) than the natural decay of the wooden structure, the site will have been occupied for, say, one hundred years. This fits the fact that the enclosure bank showed no signs of any changes. Only experience from other similar sites can show if the relatively small number of relics in relation to the duration of the occupation is an indication of a periodical occupation of the site—*i.e.* that the inhabitants moved seasonally to and from other areas, that they went to the hills during the summer with their flocks and returned during the winter to the lower ground. There are in Perthshire quite a number of habitation sites,³ some with pottery of the same period as that from Scotstarvit, situated on levels about 1000 feet, which could only be inhabited with difficulty during the winter. Houses

¹ *Fife Inventory*, Introduction, p. xxix.

² P. 86.

³ For sites in Perthshire *P.S.A.S.*, vol. lxxx (1948), p. 131.

left uninhabited during the summer would need more repairs than constantly inhabited ones, so the rebuilding of the house may even indicate a shorter duration. We know too little about the happenings at this period in this area to say if this conclusion allows us to date the building of Scots-tarvit more closely to about A.D. 80, as the disturbances caused by Agricola's expedition would certainly have brought peaceful conditions to an end here. We know nothing about the date and type of habitation inside Our Lady's Wood Fort, and cannot therefore say if it was earlier or later than Scots-tarvit, and if it had any connection with our enclosure. The finds give no direct clues to the purpose of the enclosure and of the buildings, and tell nothing about the cultural relations between the inhabitants and the various contemporary Iron Age cultures.¹

Some help about purpose of building and enclosure bank can be got from the analysis of the lay-out of the buildings and their pedigree from ethnological parallels² and comparison with buildings of similar type in the British Isles. Our building belongs genetically to that group of circular dwelling-houses with vertical outer walls and conical roof, which has the roof supports arranged in such a way that the centre of the house is left free of posts and the hearth can be built there. From this we can assume that there was in the centre of the building a hearth and that it was a dwelling-house. The ethnological parallels show that it represents an advanced stage in the development of this group. In the prototype a single ring of roof supports is concentric with the outer wall. (In the long development of this group another line of evolution has branched off where the centre is also left free for the hearth by the roof supports, but in which the posts of the inner ring are not arranged concentric with the outer wall but in a pattern symmetrical to the main axis, through entrance and centre.) The maximum diameter of the prototype is limited by the possibility of bridging the span between the outer wall and the supports inside, and if houses with a bigger diameter have to be built, this technical difficulty is overcome by the addition of one or more concentric rings of posts. The house is enlarged by accretion, and the central area retains the original lay-out. At Scots-tarvit one such ring has been added in order to get a house of a bigger diameter, and we have therefore the three elements: (1) outer wall, (2) middle wall and (3) inner ring. If by intrusion of another architectural element the entrance of the house of our group is derived from a porch and, as in our type, constructed as an entrance hall, ethnological parallels indicate that the intrusion of this element (4) is a feature common to houses with a floor sunk into the ground and with earthen roof. The excavation evidence had already brought us to the assumption that this was the case at Scotstarvit.

¹ A detailed study of the Scottish native pottery is still awaited, and there is no stratigraphical evidence for the exact dating of the native pottery at Traprain Law.

² F. Oelmann, *Haus und Hof im Altertum*, Berlin-Leipzig, 1927, p. 22.

For the evolution of the houses of this group we cite the following examples from the British Isles. The small prototype is known from Maiden Castle in two variants, with concentric roof supports around the hearth and unconcentric ones.¹ At Little Woodbury we have a slightly smaller variant than Scotstarvit of the enlarged type with concentric roof supports and with entrance hall.² There the inner ring is reduced to four posts set in a square equidistant from the middle ring. The Manx raths and the rath at Lissue, Co. Down,³ are examples of the type where the house is so big that many more rings have been added as roof supports. These big houses share with Little Woodbury and Scotstarvit the entrance hall; and the floor level inside the house steps down in terraces to the central area around the hearth. As nothing of the floor at Little Woodbury is preserved, we do not know if that house too had floors at different levels. It may be that the drain *Dr b* indicates that such was the case.⁴ So we possess a genetically well-established series for the evolution. The type with concentric roof supports can be traced back by the example of Little Woodbury and Maiden Castle to an Iron Age A-B context, whereas the type with no concentric roof supports around the hearth is known from Maiden Castle in an Iron Age C context.⁵ We have not enough finds from Scotstarvit to state if this context with the Iron Age A-B civilisation of the south of England, suggested by the similarity of the house-type, has any significance for the cultural relations of the inhabitants of Scotstarvit enclosure.

The big houses, Little Woodbury like the Manx raths and Lissue, are definitely farmhouses, the homesteads of wealthy farmers. In Little Woodbury the main accent is laid on corn growing and in the raths on cattle raising. The Scotstarvit house with a diameter of 60 feet exceeds in size the bigger farmhouses of the Iron Age farmsteads in the south and west of England, which measure on the average about 45 feet in diameter. It is also bigger than the roundhouses in the hut villages and farms (enclosed or unenclosed) in Wales or in the north of England. It has the same dimensions as the smaller of the farmhouses of the rath, crannog, cashel type in Man, Ireland and Scotland, where all the buildings of a farm, dwelling-house, storage rooms, byres and so on, were under one roof. I think we are entitled to see in the Scotstarvit enclosure also, the homestead of a wealthy farmer, and there are no signs that the owner of the enclosure had any other occupation than farming. The big dwelling-house was surrounded by a solid wall

¹ R. E. M. Wheeler, *Maiden Castle, Dorset* (London, 1943). Site D, figs. 18-19, house DB, house DB 2. In house DB 2 there are also ovens belonging to different phases in a position like our fragmentary oven *d*, fig. 5.

² Little Woodbury, *P.P.S.*, vol. vi. (1940), p. 78.

³ *U.J.A.*, vol. x (1947), p. 30; vol. xi (1948), p. 131.

⁴ The incomplete ring at house II at Little Woodbury (*loc. cit.*, fig. 27) may be the remains of a similar partition or revetment.

⁵ The farm ("concentric circle site") at Llyn du Bach, Penygroes, Caernarvonshire, reported in *Arch. Camb.*, has also a house with non-concentric roof supports.

(enclosure bank), which provided reasonable protection against wild animals and occasional robbers. This wall enclosed the farmyard, which was subdivided by solid fences (walls *m-q*) radiating from the farmhouse. As the enclosure could not be completely excavated, we do not know if there were other buildings besides the farmhouse inside the yard, but enough was uncovered to say that no other solid building of sizable dimensions could have stood there. We are certainly not dealing with a village-like community.

If cattle raising was the main occupation of the owner of Scotstarvit, a certain discrepancy arises from the fact that the big farmhouse takes up almost half of the enclosed area, and that the yard is not only relatively but absolutely rather small if it had to shelter the flocks of a wealthy man as indicated by the size of the farmhouse. If Scotstarvit were a summer homestead on a high level, no solid protection like our enclosure wall would be needed during the summer for all the flocks of a wealthy man, but it is situated at a low level where occupation during the winter is certain; and it is just in winter that room for sheltering cattle is a necessity. There are two alternative explanations: (*a*) either the homestead was only the residence of someone of high social standing who as overlord over other people was not directly concerned with his flocks, or (*b*) corn growing was the main occupation of the owner and so not so much space for cattle was needed. We still know too little about the social organisation of the Iron Age people in Scotland to say if alternative (*a*) is likely, but the fact that the fields surrounding the site are to-day first-class corn-growing land fits (*b*) well. Perhaps the size of the house was necessary in order to have room to store the grain inside the house in baskets in an upper floor over the central area. The substantial silo pits which were in use so commonly among corn-growers in the Iron Age in the south of England are unknown in Scotland.¹

Any attempt to estimate the numbers of farms like Scotstarvit will always remain quite unreliable, as such sites are apt to be destroyed by modern agriculture without leaving any traces behind. We shall never learn how common these sites have been, and if we try to compare the number of these sites with those farms where more stones have been used and so have survived better, we will get only unconvincing results. Nevertheless the excavation at Scotstarvit has helped to show that the type of farm with one relatively big dwelling-house in a central position in a yard, whether the enclosure is round or rectilinear, represents an integral part in

¹ It may well be that the souterrains (the type with long narrow "segmented" chambers) are an equivalent for the souterrain silos in the farms of southern England. Their present-day condition is misleading. They were well suited for this purpose, and certainly quite dry when the surrounding area had been roofed over, as we supposed was the case in the raths. But there are no indications that there was a souterrain at Scotstarvit, and in none of the enclosed farm sites of the type of Scotstarvit is a souterrain known to have existed. So, unless we find the traces of special storage buildings above ground, the big house had to provide the storage room for grain (see fig. 9).

the social structure of the Iron Age civilisation of the British Isles. Defective as surface evidence admittedly is, reliable plans and detailed study of the terrain, coupled with experience obtained from excavated sites, reveal that many homesteads or settlement sites are originally farms of the Scotstarvit, Little Woodbury type or of the directly related variations, but with a complicated lay-out simply due either to the addition of other buildings during a long occupation, or to reoccupation with new buildings and even the construction of a new complete farm.¹ There may also exist cases where in a more specialised economy secondary permanent structures in the yard were from the start components of the farm, but I would think that homesteads with a number of circular buildings of relatively equal size arranged in a pattern like that near Pen y Bryn Uchaf, Llanwonda,² are offshoots of other lines of evolution than Little Woodbury or Scotstarvit.

The author is conscious that he has gone rather far in the interpretation of a badly preserved and not completely excavated site. He did so in order to touch some of the many problems involved in habitation sites, the social history of the Iron Age, and the correlation with habitation sites of knowledge gained from the typological study of implements and pottery. He hopes that he got some threads, but only future excavations will show if these threads can be woven into a solid fabric with the pattern of the historical and cultural perspective.

ACKNOWLEDGMENTS.

The St Andrews Branch of the League of Prehistorians has earned the thanks of those interested in the early history of Scotland because it intentionally refrained from excavating an impressive site of exceptional size but of only limited value. I do not want to conclude without thanking those who helped us to reach these results at Scotstarvit. A grant by the Carnegie Trust made the excavation possible. Permission to dig on the site was given by the owner, the late Colonel Black of Edenwood, and, it being a scheduled monument, by the Ministry of Works, which also gave permission to use Scotstarvit Tower as headquarters during the first campaign. The Secretaries of the League, Messrs T. B. Mitford and G. P. Henderson, not only organised everything splendidly for the not too easy task of a first

¹ The plans published in *Roy. Com. Anc. Mon., Westmorland* (London, 1936), provide a good illustration. There are simple sites like Scotstarvit, such as Howgill Fold, Warcop (Nr. 13, p. 239), Bampton-Towtop Kirk, Crosby Ravensworth (Nr. 73, p. 33), and Smardale Demesne Waitby, south settlement, southern enclosure of eastern group (Nr. 9, p. 234). The big site of Eweclouse, Crosby Ravensworth shows in the enclosure in the north-west corner how a simple site has "disintegrated" by later additions to a complicated one (Nr. 25, p. 84). In one of the few completely excavated sites of our type, Milking Gap, Northumberland (*Arch. Aeliana*, vol. xv. (1938), p. 334), the evidence of the soil is not conclusive for dividing up the different huts into different phases. The excavator, Kilbride-Jones, had already suggested that hut 2 is a later addition, and the plan strongly suggests that huts 4 and 5 and probably also hut 3, are not components of an original lay-out of an enclosure with one central hut (1) inside it.

² W. Hemp and C. Gresham, *Antiquity*, vol. xviii. (1944), p. 188, fig. 3.

excavation undertaken by the League, but also worked untiringly on the site itself. Professor and Mrs Stuart Piggott helped kindly with advice and actively on the site; and I am also obliged to Mr Cumming, Professor of Geography at St Andrews University, for valuable advice on the geology of the site. The common effort of the voluntary helpers, mostly students from St Andrews University, Messrs Henderson, Hooper, O'Mearon, Turner, provided an outstanding example of what can be done by voluntary labour in four weeks if real interest, as was the case here, gives inspiration to the work. The same applies to those helpers who could lend a hand only occasionally and took on themselves hard work, like Mr R. A. H. Farrar, Weymouth, and Mr Douglas, the headmaster of Bell Baxter School at Cupar, and his boys. But a special word of thanks is due to the ladies, to Mrs Roberta Sinkalska (during the fortnight in 1946) and to Mrs Henderson, who took in both years such excellent care of the well-being of everybody in the camps.

APPENDIX I.

Mr Stevenson reports on the finds as follows:—

The dozen and a half sherds of hand-made pottery from Scotstarvit are mostly very small.

From the hollow and hearth older than the structures comes a fragment with grey-black core containing grits, whose brick-red surface bears three close-set parallel whipped cord impressions. It appears to represent an Early Bronze Age food-vessel, or perhaps "Late Neolithic" Peterborough ware. Two featureless sherds stray on the site might belong to the same period; one is rather soapy to the touch.

Two rims of dark ware probably belong to the period of the structures. One, from a foundation trench of Phase II, curves inward to an uneven lip, and is of slightly sandy fabric with large grits. The other comes from the stone front of the outside bank. Its surface is rough and horizontally striated, the fabric being similar to that of the other rim but not markedly sandy. The rim is flattened with a hollow below the inner edge of the lip, and had been some $8\frac{1}{2}$ inches in exterior diameter. There is a sooty deposit on the inside. The other sherds are reddish, at least on their outer surface, usually thinner, and sandy with a dark core. The only one that requires further mention seems to bear a $\frac{1}{2}$ -inch-wide cordon moulding; its fabric is slightly sandy, but contains large grits and is about $\frac{1}{2}$ -inch thick. Only very tentative conclusions can be drawn from such scanty data. However, a similar mixture of sandy and non-sandy wares occurs at Traprain Law,¹ where the flattened and inturned rims and even the cordon would be in place. This suggests a contemporary date for Scotstarvit—in the earliest

¹ Childe, *Prehistory of Scotland*, p. 250.

centuries A.D. When, if ever, the sandy ware ousted completely the gritty ware which continued the Bronze Age cinerary urn tradition is still unknown.

The four pitchstone flakes found stray were all small, less than 1 inch long, and blade-like. They resembled the flakes of similar material found at Hedderwick, East Lothian,¹ and in Lauderdale. In the early hollow there was a small knife of grey flint, made from a hog-backed flake pointed at both ends, with the upper edges steeply retouched and the upper surface of one tip also worked (size $1.55 \times .4 \times .25$ inch). Near the hollow was found a flake of rich red flint, with pronounced bulb of percussion, wanting the distal end. Its upper surface is the rough outside of the original pebble, except along one side where a narrow flake had been removed to form an edge which shows signs of use (size $1.9 \times 1.3 \times .35$ inch). The only general account of pitchstone implements is that by Mr Mann.²

APPENDIX II.

The Assistant Director of the Geological Survey of Great Britain, Edinburgh, reports:—

I have examined under the microscope slices cut from the specimens. All the specimens are fragments of pitchstone, and strongly recall the well-known pitchstone of Arran. They contain the localised radial groups of large crystallites, fringed with arborescent growth of smaller crystallites, which are so characteristic of the Arran occurrences. They bear no resemblance to glassy andesites from the Ochil Hills area. I think it highly probable that Arran was the source of all the Scotstarvit flakes.

The dark, glassy-looking flake from cutting I is the most glassy rock. The glass contains extremely minute, evenly disseminated, embryo hair-like crystals (crystallites).

The greyish cherty-looking specimen from cutting V is a very similar pitchstone. The glassy groundmass is, however, slightly more devitrified owing to disseminated development of extremely minute hair-like embryo crystals (crystallites).

The greenish-grey flake from cutting IV, with glossy surfaces and more stony-looking interior, is also a pitchstone, but is very considerably devitrified and rather opaque owing to the development of minute hair-like embryo crystals, and also to the greater concentration of the larger embryo crystallites with arborescent growths. I do not know why the flake should have glossy surfaces and stony-looking interior.

¹ *P.S.A.S.*, vol. lxiii (1928-29), p. 35.

² *Ibid.*, vol. lli, pp. 140-9; see also *Prehistory of Scotland*, p. 30.

XIV.

RECTANGULAR ENCLOSURE ON GREEN CRAIG, FIFE.

BY GERHARD BERSU, HON.F.S.A., HON.F.S.A.Scot.

One mile south of the Tay and seven miles south-east of Dundee lies one of the numerous hill-forts of Tayside.¹ It is listed in the Royal Commission's *Inventory of Fife*² as No. 144, and is described as follows:—

"This fort (Green Craig) is situated 600 feet above sea-level, on the crest of a ridge, about half a mile north-west from the old Parish Church of Creich (450 feet O.D.), but it is now hardly recognisable. It is only with difficulty that the outline of the main enclosure can be traced. It is oval in plan, and lies with its major axis east-north-east and west-south-west. It measures approximately 96 feet from north to south and 113 feet from east to west, and is bounded by a low much-spread rampart, which shows a good deal of stone, and may originally have been a wall. There are two entrances, one at the south-west and the other at the south-east.

Appearances suggest that the site has also been defended by a fairly strong wall running along the precipitous rocky scarp on the north side, but there is no very clear connection between this and the main enclosure. The wall is in a ruinous condition, and its line can be identified only by fragments of debris between natural outcrops of rock-surface. 27 May 1925."

The six-inch map, Fife, III, 14 (surveyed 1893, and revised 1913), shows the precipice towards the Tay, and marks a circular enclosure of about 110 feet diameter on the top of the hill, and outside it on the slope of the ridge towards the south a bank. This runs southward from the eastern end of the precipice in a wide arc, then turns north until it reaches the west of the precipice, so that altogether an area is enclosed 400 feet from east to west by 500 feet from north to south. But the site is really much more complex. There are traces of a second enclosing bank to the north-east farther down than the outer bank on the map. Inside these banks there are many circular depressions like hut sites; the ring on top looks more like an irregular enclosure with isolated huts, and there was certainly never a continuous stone wall running along the precipitous rocky scarp on the north side. The two outer banks are probably not contemporary, as the outermost bank on the north-west (before it joins the inner) was evidently a wall with an inner and outer face, whereas the inner bank (that on the map) was a terrace-bank of the type represented by the ramparts of Kaimes Hill, Midlothian.³ This terrace-bank reaches the precipice at the north-east

¹ Nat. Grid ref. 37/324215.

² P. 68.

³ V. G. Childe, "The Defences of Kaimes Hill Fort, Midlothian," *P.S.A.S.*, vol. lxxv. (1941), p. 43.

some 30 feet farther east than is shown on the map. We may conclude that the fort, which is very vulnerable from the south, was a village or oppidum-like settlement at the time when the terrace-bank was in use.

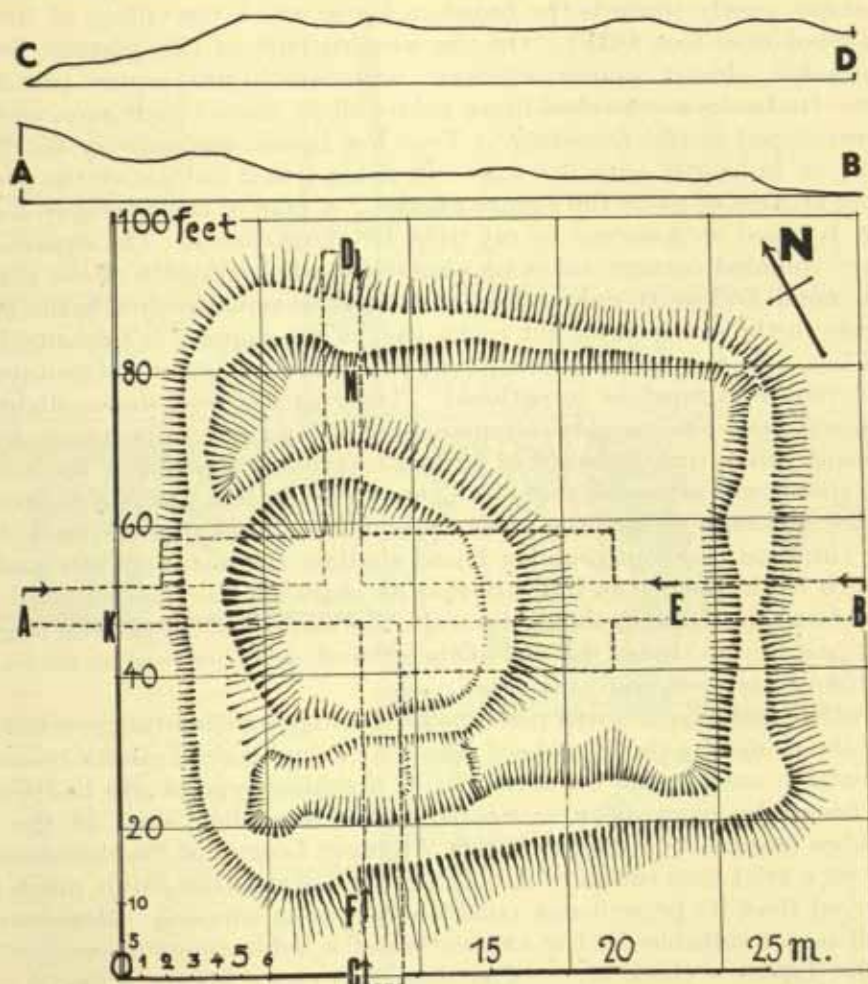


Fig. 1. Plan of enclosure at Green Craig (broken lines show limit of excavation). Above are profiles of present-day surface, west to east (A-B) and north to south (D-C).

Careful survey of its complex features may reveal, even without excavation, its different components.

Outside the hill-fort on the east towards the precipice, a small natural plateau of triangular outline lies directly under the terrace-bank, at 500 feet above sea-level. It ends towards the south-east, towards the valley, in a kind of spur. To the west the base of the triangle is formed by the end of

the talus of the terrace-bank of the hill-fort. The northern side slopes steeply towards the depression which separates Green Craig Hill from the neighbouring ridge of Black Craig (650 feet O.D.), whereas the southern side slopes gently towards the broad valley in which the village of Brunton is situated (350 feet O.D.). On the western part of this plateau lies the rectangular, almost square enclosure with which this report principally deals. Its banks are marked like a field-wall on the six-inch map, and it is not mentioned in the *Inventory*.¹ Four low banks, respectively 25, 24, 22 and 25 m. in length, with flat tops still rising 1 to 2 feet above the ground, enclose an area of some 400 square metres. A plan of the enclosure is given in fig. 1, based on a survey by my wife, Dr Maria Bersu. The square, with sharply rounded corners, takes up almost the whole breadth of the plateau. In the north and south only a kind of short berm remains outside the banks, whereas to the east a level but rocky part of the plateau is left outside the enclosure. So the squarish outline of the enclosure is not necessitated by the terrain, and must be intentional. The enclosed area slopes slightly to the south-east. A roughly circular bank of similar appearance to the enclosing banks (inner diameter 10 m.) touches the inside of the western bank, that towards the hill-fort. No gaps gave any indication of an entrance into the enclosure or into the inner circle, but a thinning of the bank of the inner circle on the south, and a broad shallow rise between this and the southern bank, seemed to indicate that an entrance was once situated here, at a natural approach to the enclosure. The surface of the plateau is to-day rough pasture, no stones rise out of the ground, and there are no traces that the ground has ever been cultivated.

The site looked quite well preserved. Its exposed situation precluded its being the ruins of a modern sheep pen. As it had special merits because of its situation outside the hill-fort, and as a similar type of site had not yet been tested by excavation in Scotland, the remaining week of the 1947 campaign (see pp. 241-263) of the St Andrews League of Prehistorians was spent on a trial excavation of it. It turned out that the site is much more destroyed than its present-day condition led us to suppose. Moreover, the subsoil is not suitable for the excavation of a habitation site (see sections, fig. 3). Under a thick layer of modern fine peaty humus *d* lies a coarse greyish glacial gravel *b*, mostly material from the Highlands, which covers the plateau's solid rock *a* (andesite). The rock is broken by cracks, and there are broader and smaller fissures filled with heavy clayey rubble *e* (mostly fragments of andesite) of a somewhat more brownish colour than the overlying gravel. These conditions, the lack of any trace of an old surface,

¹ 300 feet to the south of it, about 50 feet lower than the plateau, there lies on a flat part of the slope another rectilinear enclosure of similar dimensions, with the ruins of a rectangular building (? cottage) inside it. The stones of the walls of the building have been taken away, so that flat trenches mark the outline of the building. Another isolated homestead of this type, in a similar raised position lies on the hill west of the old manse of Brunton, above the cottage of Mr J. A. Harley.

and the lack of any darker-coloured occupation layer inside the enclosure, made it rather hopeless to recognise in the area of the fissures the remains

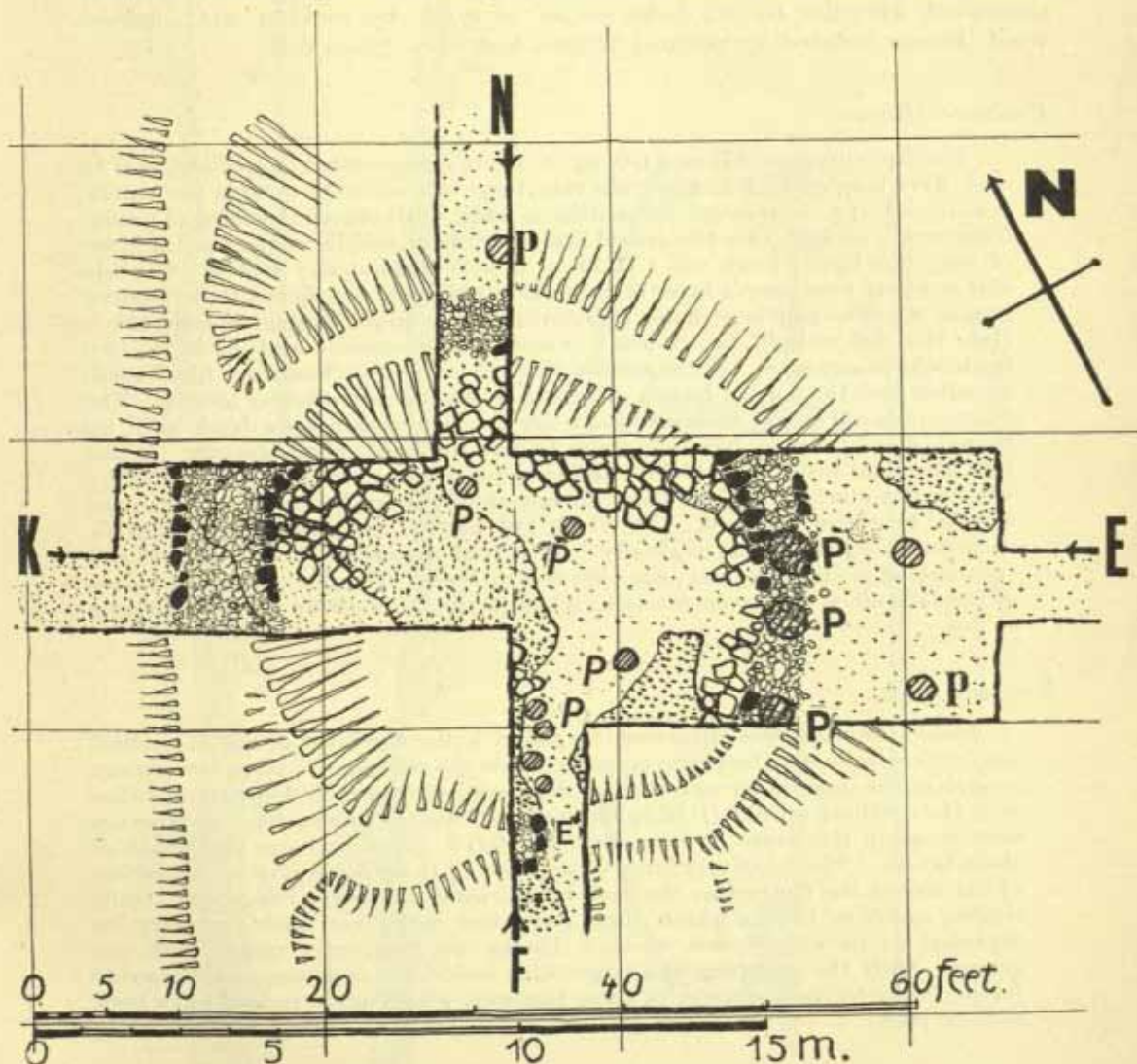


Fig. 2. Ground-plan of excavated area, inner circle.
(Black, facing of banks: narrow stippling, fissures: P, post-holes.)

of features like post-holes belonging to wooden constructions. The situation is somewhat better where the rock floor is unbroken; the holes, which are marked P on the plan, fig. 2, can fairly certainly be considered as post-holes. They are filled to-day with coarse rubble, and bigger fragments of andesite,

which is very hard and apt to break up in irregular splinters. The outline of the post-holes (with the exception of those inside the inner circle) is somewhat irregular for no holes could be made by picking, and instead whole blocks isolated by natural fissures had to be taken out.

Enclosure Banks.

The two cuttings (AB and DC, fig. 1) made from north to south and east to west were long enough to ascertain that there was no ditch outside the banks. Section DF (fig. 3) through the northern bank (NB) shows the natural gravel *b* above the rock *a*. On the gravel there lies in the middle of the bank a layer of very fine light brown soil *c* (1.50 m. broad) without any stones. Outside and inside of *c* we have a layer of andesite rubble, and on top the thick modern humus *d*. The southern bank (SB) overlies the rubble filling of a fissure *e*. Here the core of light brown soil *c* is lined on the outside and inside by two big blocks of andesite. In the section through the eastern bank (not illustrated) we again met the core of brown soil *c* and inner and outer facing blocks. The scanty remains of the enclosure bank are the last remains of a bank built up by sods *c* and lined by blocks in order to give the bank more strength. When this bank had been robbed of its facing of blocks, the sod core was eroded by wind and water, and so we have no means of getting information as to the original height of the bank. Its width 1.80 m. and its facing by stones allow us to assume that it was originally just as high as modern field walls are and constructed in the same way, say 1.50 to 2 m. high. The few remaining blocks of the face allow no statement as to whether the blocks were set as orthostats or flat.

Enclosed Area.

Inside the bank the surface of the gravel *b* (the top layer of the untouched soil) differs in no way from the layer *b* outside the enclosure. Near the eastern stretch of the inner circle two shallow depressions in the rock floor, and another near the northern stretch (P in fig. 2), may indicate that some wooden structure once stood in this area (Pa in section AE, fig. 3, gives diameter and depth of these holes). The relatively large dimensions of these holes give no indication of the size of the timber, as the rock breaks away here very irregularly, while sizable andesite blocks which they contained could not with certainty be regarded as packing-stones, as such blocks are frequently mixed with the gravel. Only the stripping of a larger area inside the enclosure could provide further clues to the character of these features, which might indeed have been shallow pits.

The Inner Circle.

Three sections through the bank of the inner circle (BH in fig. 3) show that here, instead of a core of decayed sods, we have a rubbly core of small stones and fine earth *f* again faced by bigger blocks inside and out. On the eastern side (see fig. 2, and BH, section AE, fig. 3) one course of probably orthostatic blocks is preserved on both faces, the total width being 1.20 m. The sections through BH show that where the facing blocks have been robbed

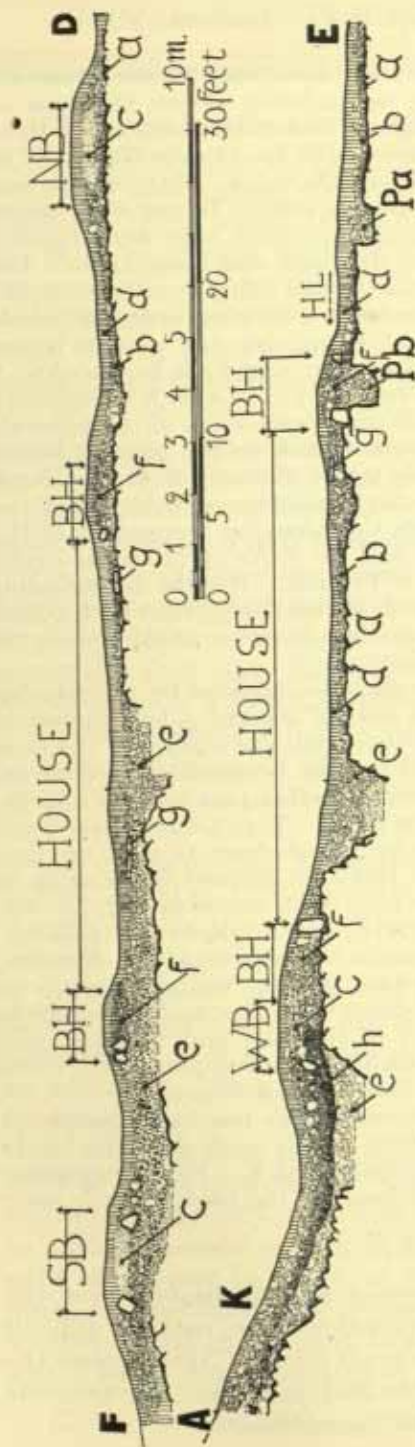


Fig. 3. Vertical sections F-D, A-E (see fig. 1).

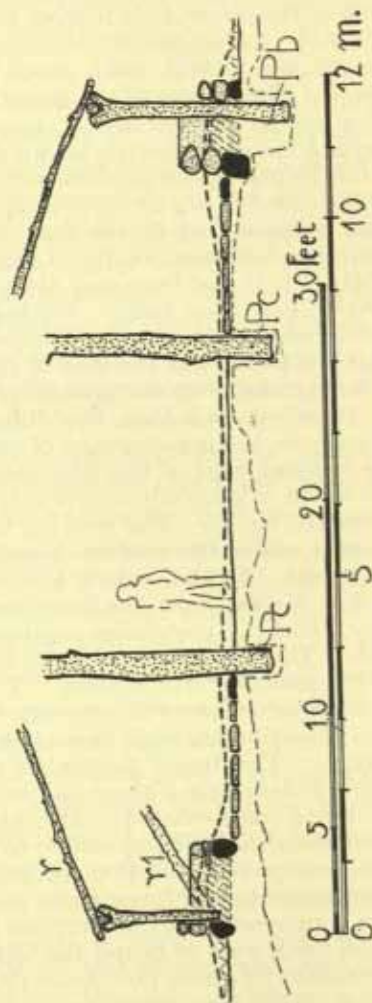


Fig. 4. Reconstruction diagram.
(Black, blocks lining rubble core; remains of rubble core obliquely hatched. Thick broken line, present-day surface; thin broken line, rock-floor.)

not much rubble core has been spilled, so that, since there is no reason for taking away such rubble filling, unlike the useful facing blocks, the bank of the inner circle can never have been very high. Under the western side three big well-made post-holes of identical dimensions (P, fig. 2) were found. The most northerly of these holes Pb is cut in section AE, fig. 3. No such hole was found to the north, where the rock was extremely solid. To the west, where the bank of the inner circle merges with the enclosure bank, they were together 2.80 m. wide, as proved by the remains of the inner and outer faces. The section AE, fig. 3 (WB, BH), shows inside the rubble filling *f* and outside the sod core *c*. The blocks of the outer face are set in a darkish layer *h* of rubble and clay mixed with charcoal, fragments of burnt clay and animal bones. This layer *h* lies on yellowish-brown filling of a fissure *e*, and can be traced to A in the full length of the western part of our cutting AE. Layer *h* is obviously material washed down or thrown down from the terrace-bank of the hill-fort, and had accumulated at the foot of the terrace-bank on the plateau before our enclosure had been built. Layer *h* ends rather abruptly inside the bank WB, BH, as if it had been dug away when the foundation of bank BH of the inner circle had been built. We learn from this that the occupation of the hill-fort is earlier than the enclosure bank and the bank of the inner circle, and that the latter was the first of the two to be built. But the arrangement of the facing blocks in the ground plan, fig. 2, shows clearly that both banks belong together, and that the difference in time between them represents only a stage in the construction of the whole site.

The original level of the floor inside the circle is indicated by the remains of a pavement of carefully and closely placed slabs of andesite *g*, best preserved on the north (fig. 2). The sections in fig. 3 show that the surface of the floor lies directly under the modern humus *d* and that no occupation layer covers the pavement. In the eastern half of the circle are four post-holes (P, fig. 2), 2.50 to 3 m. distant from the inner face of the bank. They are smaller (30 cm. diameter) than the post-holes mentioned above, but go down 40 to 50 cm. into the rock. The structure of the andesite at this spot allowed the making of holes with smooth vertical sides. They are filled with coarse gravel, but the bigger material in the two easterly holes was clearly arranged like packing-stones. A section through these holes is used in the reconstruction diagram, fig. 4 (Pe). The broad fissure in the western part of the circle made it impossible to ascertain if there had been post-holes there also, and if a complete ring of posts once existed. The high level of the floor and the bad state of preservation made it impossible to ascertain if the central part of the circle had also been paved, and if there had once been a hearth there.

An entrance to the inner circle seems indeed to have lain in the south (E, fig. 2) in conformity with the surface indications. It is marked by the blocks facing the bank west of E and the lack of rubble core at E. Further evidence is the situation of three post-holes (P, fig. 2) between the bank and the inner post-holes, which they resemble.

The state of the subsoil, the nature of the rock and the fissures in it, the ruined state of the site and the lack of an occupation layer, make it difficult to interpret the archaeological features of the inner circle. Nevertheless the fragmentary evidence can be summed up in the statement that it represents the ruins of a round house contemporary with the enclosure.

Reconstruction (fig. 4).

• This house is quite a respectable building, being 12 m. in outer and 10 m. in inner diameter.¹ The section AE, fig. 3, shows it placed on a natural platform, which gives it not only a certain prominence but also helps the drainage. (The letters HL in fig. 3 mark the level of the pavement inside the house as against the level of the surface outside of it.) Its position on the west side of the enclosure, at the foot of the slope up to the hill-fort, provides some shelter for the house. The inner diameter of 10 m. makes an inner ring of posts necessary as roof supports. The four posts P in the eastern half of the circle (fig. 2) are evidence for such a ring, 5 m. in diameter, consisting of seven or eight posts when complete. The evidence showed that the outer wall of the house, a rubble core faced on the inside and outside by blocks 1.20 m. wide, was never much higher than the existing core indicated in our reconstruction by oblique hatching. An obvious function of such a low outer wall is to support the rafters of the roof. But in that case our outer wall would have been too low for people to move easily inside the house in the area between the wall and the inner ring of posts (*r1*, left, in fig. 4). Even if the roof had been steeply inclined that area could, on such a reconstruction, only have been used for storage purposes or beds—a rather wasteful use of a roofed-in space. The existence and level of the pavement *g* in this area make it, in fact, unlikely that the space had ever been taken up by beds. Further, in view of the exposed character of the site, there are serious objections against the existence of a steeply inclined and therefore high roof. So we may assume additional vertical wooden posts set in the circuit of the earthen bank as support for roof and rafters. If these posts had been 1.50 m. high above the pavement, full use could have been made of the space near the wall. The posts could not have been much higher, in order to avoid a too great elevation of the central part. Moreover, in view of the dimensions of the house, the roof supports need a stronger foundation than a low earthen bank can provide: they need within the bank a proper foundation, such as isolated posts which could support a horizontal beam on which the rafters could rest. Three big post-holes P were indeed found in such a position. The size of the low bank would have been sufficient for there to have been set in it, in the interval between these posts, thinner vertical posts to form the upper part of the house wall and to provide additional support for the roof timbers and the sods, which may be assumed as roofing material (*r*, left, in fig. 4). If the big posts were set on the outer edge of the post-holes *Pb*, as shown on the right in fig. 4, and the smaller posts on the outer edge of the bank, as on the left, there would be width enough on top of the bank to allow of its use for a bench or beds, and such would be its main function. The verification of such a conception of the

¹ Cf. The Little Woodbury house, Wiltshire, 15 m. in diameter, (*P.P.S.*, vol. vi. (1940), p. 80, fig. 20).

outer wall on better preserved sites would be worth while, and whether such construction is a characteristic feature in certain areas, perhaps with rocky subsoil or of certain periods.¹

The three post-holes north of E (fig. 3) might mark posts supporting an entrance hall; they are set so close that they are possibly not all contemporary but may partly indicate repairs. Unfortunately the fissure to the east made it inopportune to look for the opposite wall of the suggested hall.

CONCLUSIONS.

The reconstruction in general fits well into what we know about round houses used as dwelling-houses in a farmstead, and no evidence was found to contradict the interpretation of the whole site as a homestead or farm. There was apparently only the one building with an earthen bank, but the post-holes outside the inner circle may have belonged to granaries or other wooden buildings for agricultural use inside the enclosure or farmyard.² The yard is rather small in proportion to the house, and not many cattle could be sheltered in it. Perhaps the ruins of the hill-fort still provided in those times some shelter for cattle if trouble occurred. We found no positive evidence of the type of agriculture or husbandry, but it may be noticed that the fields below Green Craig to-day are first-class corn-growing land. No traces of ancient fields to be connected with our site are, however, visible, as in the neighbourhood of similar hut-circle sites in Wales or Cornwall. As the farmstead has a wide view to the south, and eastward towards the Tay estuary, it takes more advantage of a natural situation than does, say, the nearby mediæval castle of Creich in the valley. Yet since the plateau is overshadowed by the hill-fort, and the outlook hampered by the top of Green Craig and the neighbouring Black Craig, the homestead is in no way defensively sited. Nevertheless there must have been a reason for the choice of this raised windswept position, somewhat out of the way, but overlooking the seashore and the communications in the valley to the south. A fundamental change in the occupation pattern south of the Tay is implied by the abandonment of the hill-fort on Green Craig, and the building instead of the small isolated farm. Rectilinear enclosures with round huts, quite often more or less rectangular, seem also to exist outside other hill-forts, indicating that the change was general in south-east Scotland.³

¹ Surface indications of many hut-circles make it likely that the earthen banks were quite often not very high, even when we allow for wind erosion.

² The possibility that these posts belong to lean-to sheds or penthouses is not altogether to be excluded, but it is unlikely that they are part of a veranda, as the house is built into the wall of the enclosure.

³ Cf. Maiden Castle, West Lomond, *Fife Inventory*, No. 242; airphoto fig. 12 shows rectangular enclosure. Another example is in "Forts on Whitecastle Hill, Upper Teviotdale," *P.S.A.S.*, vol. xl. (1906), p. 16, fig. 1. There are also small rectangular enclosures at the south-western base of Traprain Law (not mentioned in previous publications, nor is a curved one on the western foot of the hill).

Probably many rectangular enclosures of our type have been regarded so far as modern sheep-pens, just as our quite conspicuous enclosure was omitted when the *Inventory* was made. Many will have vanished owing to modern agricultural activities, particularly if we infer from the smallness of the yard that the farm was that of corn-growing people, who will have used good land still tilled to-day. The lack of an occupation layer in our house and enclosure seems to indicate that the farm was not long inhabited, but not that the period was necessarily very short. Organic deposits on the surface, unprotected by trees or bushes, would be quickly eroded by water and wind, and we saw that even the old surface (turf-line) had vanished. Relics, such as pottery, food waste, etc., would decay before a protective layer of modern humus grew up; and the spoliation of the facing of the banks was another destructive factor. The only fair certainty is that the farmstead did not perish by fire.

Dating

No finds were made which allow any direct dating of the site. Some bits of charcoal and minute fragments of calcined bones found inside the enclosure as well as inside the house may not necessarily belong to the time of the farmstead, as they could have been spread from the hill-fort (layer *h*, fig. 3).

Some relative dating is given by the farmstead being subsequent to the hill-fort, for forts with terrace-banks belong to the Iron Age.

We do not yet know if enclosure walls with stone facing and a core of sods are in the area of the Tay and the Firth of Forth a typical feature of a certain period.¹ A bank with stone facing and a core of sods at Traprain Law can now be dated with some certainty as belonging to the Dark Ages, for it is stratigraphically proved later than late Roman times.² On the other hand, this bank at Traprain Law can be seen to be earlier than a homestead of "scooped enclosure" type which is mediæval.³

Likewise a general survey of the known farmsteads with one big house with earthen bank does not contribute much to the relative dating of Green

¹ Building enclosure walls of sods with a facing of stones should be treated as a rather noteworthy construction where, as at Green Craig and at Traprain Law, enough suitable stones can be collected from the surface without any quarrying, as is done to-day, to build the usual field dykes.

² S. H. Cruden, "The Ramparts of Traprain Law," *P.S.A.S.*, vol. lxxiv. (1940), p. 48, and the unpublished results of a trial excavation at Traprain Law undertaken by the author of this paper in 1947.

³ The most northern of the entrances on the western slope of Traprain Law cuts this turf-bank in a way which makes it evident that these gaps are in their present-day appearance younger than the turf-bank. The track leading through these entrances has, as R. B. K. Stevenson showed to me on the site, a continuation which ends inside the area enclosed by the turf-bank at a site which looks similar to the "scooped enclosures" published by him in *P.S.A.S.*, vol. lxxv. (1941), p. 92.

Craig.¹ The bewildering variety and the complex features of many of these habitation sites make it still impossible to use surface indication alone to establish a reasonable typology. Our enclosure has two typical features: the enclosure is rectilinear, and the house is built into the enclosure bank. Theoretically we could suppose that a rectilinear bank is a very characteristic feature, and that it is unlikely that the same people would build in the same period and in the same area curved and straight enclosing banks. But houses built into the enclosure bank occur with both kinds, and many sites are known which combine straight and curved banks.² For the area just south of the border, H. E. Kilbride Jones states³ that rectilinear enclosures with round huts are quite common, but huts built into the wall are rather scarce. He mentions that of the fifty or more sites listed in the *Westmorland Inventory*, only five have such huts. His complex site at Milking Gap, High Shield, Northumberland (second century A.D.) has one such built-in hut. A. H. A. Hogg,⁴ who has also recently dealt with these enclosures, connects the rectilinear earthworks in southern Northumberland with one or two sites in Anglesey, and points to Roman or post-Roman connection. For Anglesey,⁵ W. J. Hemp sees indeed in the tendency towards straight lines in the enclosures a feature rather of Roman than of native origin, and such farms in Anglesey where they could be dated are of late Roman or sub-Roman period. Pant-y-Saer⁶ for example, with a hut built in the wall, is the classic type of that sort of farmstead which can be dated by finds from the fourth to the sixth centuries A.D. So some evidence for the northern parts of Great Britain points to a somewhat late date for our farm,⁷ but no weight can be attached to the lack of finds, Roman or otherwise.

We are fully aware that many conclusions in this paper are tentative; they are written down in order to incite further research. We are still far from drawing historical conclusions and from connecting the different types with ethnological units. But the example of this short trial excavation may show, on the other hand, that with a relatively small amount of labour and expense some results can be obtained which certainly will enable us to make progress by accumulating more evidence.

¹ Even if there is on a site to-day only one house traceable by earthen banks or orthostats, we do not know without excavation if there were inside the enclosure other buildings entirely constructed of wood, which leave no surface indications behind after they have decayed. So even Green Craig cannot with certainty be classified as a farmstead with only one building inside.

² Example of a built-in hut in curved enclosure in *Dunfries Inventory*, No. 412, p. 143.

³ *Arch. Aeliana*, vol. xv. (1938), p. 331 (Milking Gap, High Shield, Northumberland).

⁴ *Antiquity*, vol. xvii. (1943), p. 136 (valuable map, fig. 4); *ibid.*, vol. xix. (1945), p. 82.

⁵ *Inventory of Anglesey*, 1937, p. lxxv. Rectangular and curved enclosures occur also in the neighbouring counties, Caernarvonshire and Merionethshire.

⁶ *Ibid.*, p. 12.

⁷ We have to keep also in mind that already in the Bronze Age rectangular enclosures are known from the south of England (Plumpton Plain, Sussex; Boscombe Down, Wiltshire; Cranbourne Chase, Hampshire, etc.) (V. G. Childe, *Prehistoric Communities*, p. 191).

ACKNOWLEDGMENTS.

We are indebted to Mrs J. M. Wedderburn for her kind permission to excavate on the Mountquhanie estate, to the Rev. Sydney Warnes of Creich for his friendly interest and assistance, and to Mr J. A. Harley of Luthrie-bank Farm for his loan of the cottage at Brunton, in which we had our quarters. On Mr T. B. Mitford, M.A., and Mr G. P. Henderson, M.A., both of St Andrews, fell the burden of organising the work, and they as well as the members of the St Andrews League of Prehistorians, Messrs Hooper, Henderson, Turner, Meakin, and other voluntary helpers, contributed greatly to the success of the excavation by giving their time and labour, as no paid workmen could be employed. Mrs Hester Henderson devoted herself indefatigably to looking after our material well-being in the base-camp at Brunton.

XV.

THE "WAG" OF FORSE, CAITHNESS. REPORT OF FURTHER EXCAVATION MADE IN 1947 AND 1948. BY ALEXANDER O. CURLE, C.V.O., LL.D., F.S.A., F.S.A.Scot.

During the clearance of certain parts of the ruins in 1946, evidence came to light, at two different places, of a pre-wag occupation, followed by similar discoveries in 1947.

The importance of this made it highly desirable to continue the excavation in the hope that still more evidence might be obtained of what appeared to have been a settlement of the Early Iron Age.

The evidence was as follows: (1) a number of sherds of a cooking-pot found at a depth of 18 inches beneath the floor of the "herd's" cabin K at the entrance to Wag L of the plan (fig.3, 8); (2) potsherds, scorïæ and paving on the floor of area F, from an occupation almost on the outcropping rock, the pre-wag character of which was borne out by certain structural details in the remanent portion of its containing wall on the north; and (3) the ruins of hut O, on the northern arc of the circular wag, the entrance to which had been removed by the construction of that enclosure. With regard to site (1), further digging revealed that the potsherds found beneath the floor of K seemingly came from an isolated hearth in a pocket of the rock, and further research in its immediate neighbourhood was precluded by the close proximity of the main walls of the wag. The evidence for the earlier occupation of area F has already been stated in my communication of 1948.

As regards further exploration of the wag, clearance of debris to the south-west of area F showed that what had previously been considered a

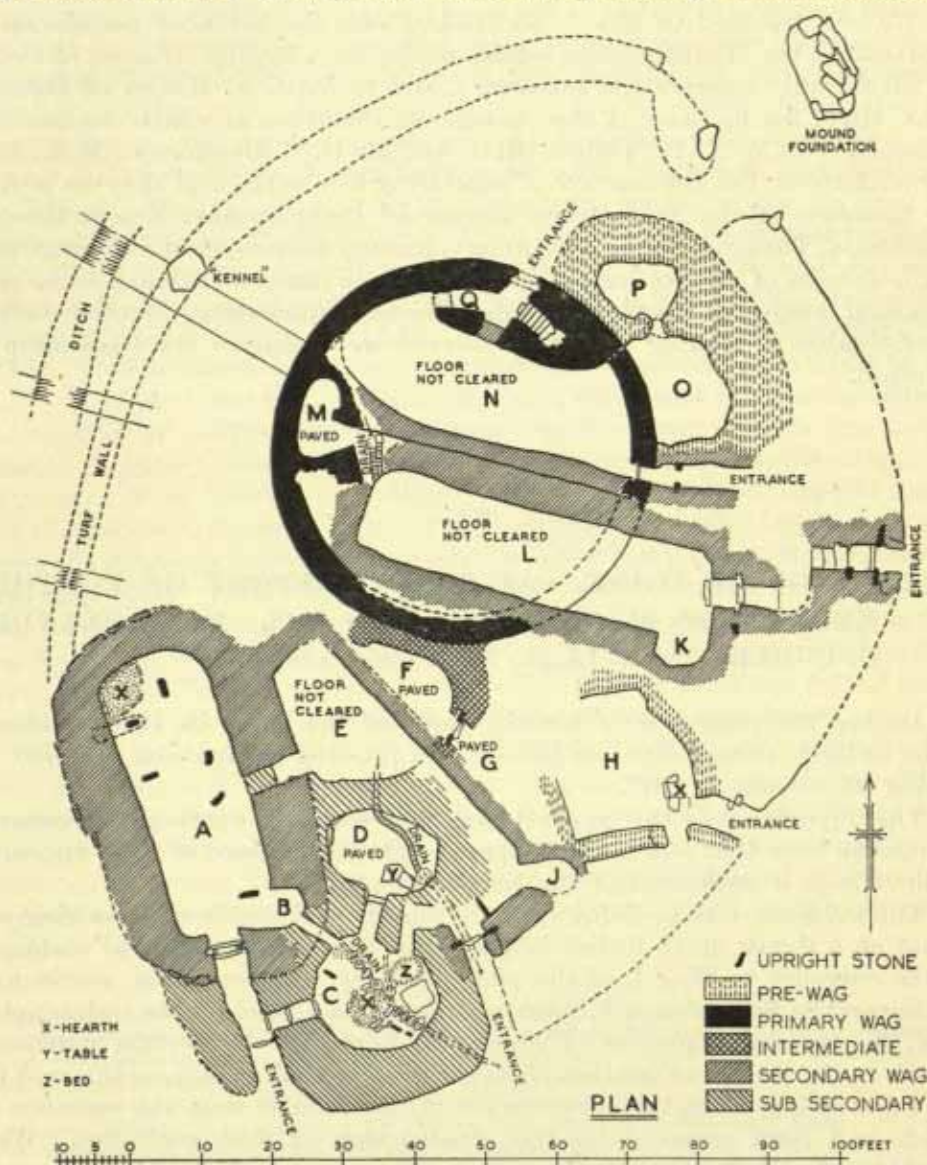


Fig. 1.

continuous wall on the sides of a wag on the west was in reality a long line of heavy foundation-stones for a wall, which had never been completed.

Towards the south end of area E the conditions were rather confusing.

A passage into the area (D) had apparently been broken through the wall of the adjacent dwelling C, and subsequently closed by an upright slab, just beyond an entrance evidently intended to give access to the proposed wag E. Inward from this point, in clearing away the debris alongside the wall of the supposed granary D, there were found a number of sherds of thick, heavy cooking-pot (fig. 3, 7), several of which had deep impressions beneath the rim made evidently with a round-ended implement (fig. 3, 7) identical in character with impressions on a sherd found in the adjacent dwelling (C) in 1939 and possibly part of the same vessel. There was also found an unusual relic, a stone discoid bead, $\frac{3}{4}$ inch in diameter (fig. 3, 12).

An examination of the hut O on the north of the circular wag, the entrance to which had been obliterated by that building, showed that, while obviously anterior to the wag, it had not been so by any length of time. But excavation through the floor revealed that it had been constructed on the ruins of a much earlier building, the floor of which lay at a level of from 1 foot 9 inches to 2 feet beneath that of O (Pl. XLVI, 1).

The early building yielded a few potsherds, including a rim, which clearly collated it with the occupation of the early site found in K. Finally, a section cut through the walls of both periods produced from the original surface potsherds of a still earlier occupation of the site.

To the east of area H and to the south of K there was a heavy accumulation of debris, the clearance of which, as it was outside the then ascertained limit of the wag buildings, did not appear to justify the labour involved. However, a large flat stone was observed lying horizontally on the surface, with the top of an upright pillar-stone which supported it. As this indicated the existence of yet another wag, work was at once commenced in clearing away the ruins, and the remains of a small circular wag were eventually exposed (Pl. XLVI, 2). Of this a lintel and pillar alone remained *in situ*, while other pillars on or adjacent to their original positions lay around (fig. 2, R). The overall dimension of the court, where obtainable, was approximately 12 feet; so, allowing for 3 feet as the projection of opposite lintels from the wall-head, the space to be covered in the centre must have been about 6 feet. As the west wall had been removed in the past the full dimensions were not procurable. In clearing the refuse to reach the base of the remaining pillar-stone *in situ*, a heap of peat-ash was uncovered lying on a floor at a depth of some 8 inches. Further clearance of the ground to the level of the base of the ash-heap exposed a circular hearth (Pl. XLVII, 1) surrounded by a kerb of oblong stones set on edge, with two taller stones forming a fire-back on the east. The west side of the hearth had been removed, but enough remained to indicate its diameter as 6 feet. It was paved all over, and an interesting feature was an opening in the paving formed by the breaking off of a corner of one of the paving-slabs near the centre, obviously for the purpose of admitting a draught to keep the

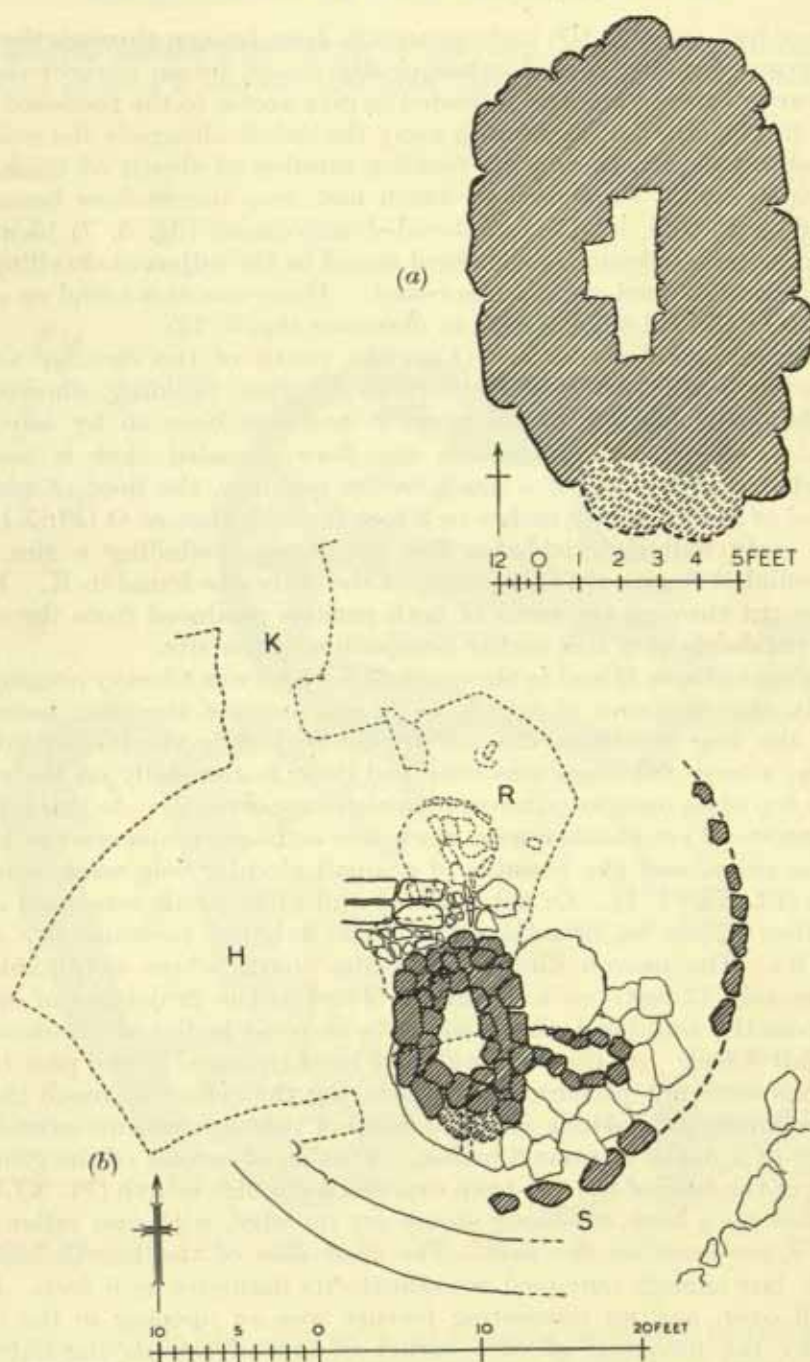


Fig. 2. Plan of "Platform," showing (a) exposed cist, with lateral recess;
(b) unopened cist, bath, etc.

peat fire alight, for which further provision was made by leaving the ground directly beneath open, while elsewhere it was solid. That it was an original aperture was clear from the manner in which the point of the paving-slab

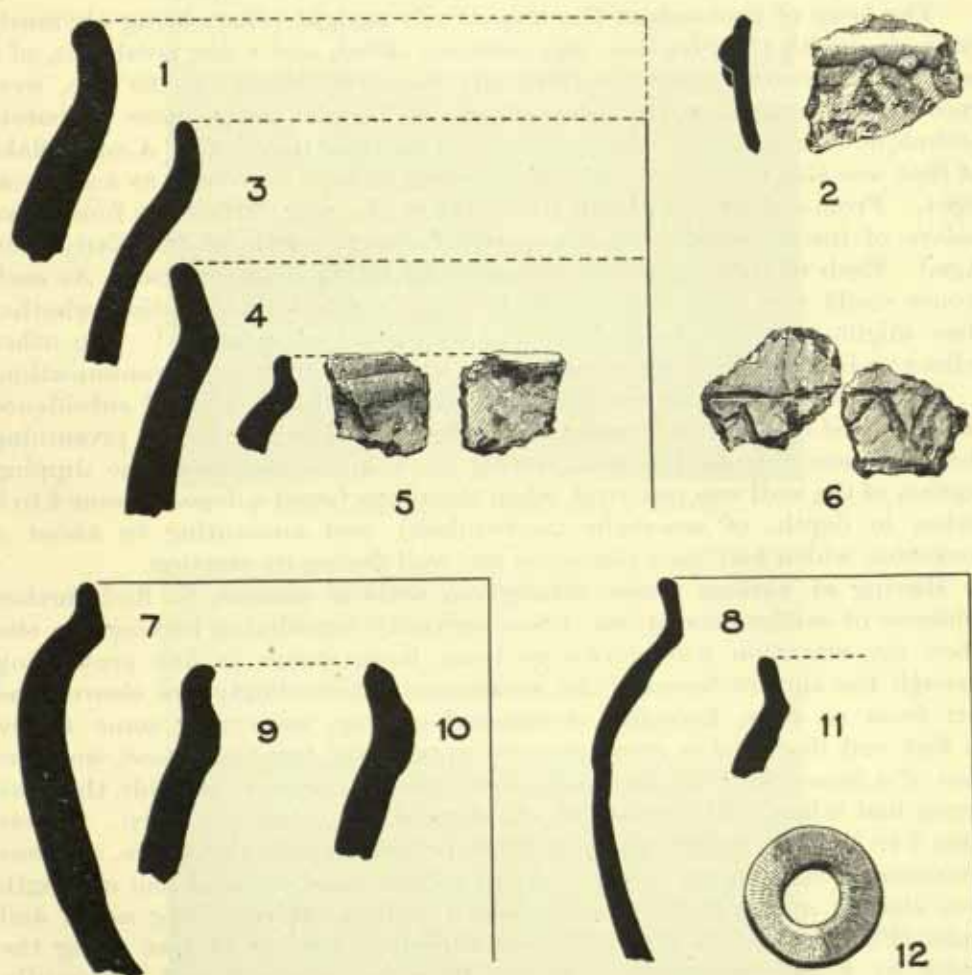


Fig. 3. Pottery fragments and sections ($\frac{1}{2}$): No. 12, discoid bead ($\frac{1}{2}$).
[No. 11 was found 8 inches from lowest level in ex-wag south-east of H.]

had been fractured, and from the depth of peat-ash which had accumulated beneath. Moreover, to admit a current of air from outside, a small aperture had been left in the south-east angle of the enclosing wall at its base. The necessity for admitting a draught to keep peat fires alight was carefully considered in the past, and it may be the case that certain conduits leading

into prehistoric dwellings, of dimensions too small to admit of their being penetrated by any known human being, may in reality have been air-vents. Such constructions were invariably provided in Viking dwellings, and were found both at Jarlshof in Shetland and Freswick in Caithness.

The heap of peat-ash at the base of the upright pillar, being obviously connected with the fireplace, was carefully sifted, and a few potsherds, of a more sophisticated character from any found elsewhere on the site, were recovered, suggesting the occupation by people using more elaborate technique than any met with elsewhere at the wag (fig. 3, 2). A small flake of flint was also found here, which appeared to have been used as a strike-a-light. From a depth of about 1 foot below the wag surface we found two halves of the miniature "saddle-querns" characteristic of the Early Iron Age.¹ Each of these portions measured $8\frac{1}{2}$ by $4\frac{1}{2}$ inches across. As such stones could not have been easily broken, it raises the question whether they might not have been destroyed as an act of sabotage! The other relics consisting of hammer-stones are noted at the end of the communication.

While examining the hearth it was observed that a marked subsidence had occurred in the wall forming the back of hut K in wag L, and presuming that this was due to the wall resting on a kitchen-midden, the dipping portion of the wall was removed, when there was found a deposit, some 4 to 5 inches in depth, of sea-shells (periwinkles), and amounting to about a pocketful, which had been placed on the wall during its erection.

Having at various places attempted, without success, to find further evidence of earlier occupation, I was seriously considering leaving the site when my attention was drawn to three large stones in line protruding through the surface towards the south-east. Accordingly, we cleared the turf from an area, hereafter designated ex-wag, measuring some 40 by 25 feet and disclosed a great mass of apparently tumbled stone, and the base of a broad wall on the south, from which it seemed possible that the stones had fallen. The mass did not suggest the ruins of a cairn. It was some 3 to 4 feet in height with a slight depression across the centre, and was composed of fairly large stones. When all the loose material had at length been cleared away, there was exposed a built platform, lying north and south (Pl. XLVII, 2), 2 feet in height and measuring 11 feet along the centre by 8 feet in breadth. It had been boat-shaped, and apparently pointed at either end. The surface was level as if so constructed. The building was rudely formed of boulders and irregularly shaped stones, with a notable absence of quarried material such as was used in the walls of the adjacent wags (Pl. XLVIII, 1). The outline of the south end had evidently been interfered with by the removal of one or two stones in the centre of

¹ These though approximately of the shape of saddle-querns do not, owing to their size, really conform to such a descriptive term, and I propose therefore that the term lap-querns might be used—their size suggesting their being worked while lying on a woman's lap rather than on the ground.



1. Hut O, with walls of earlier structure beneath.



2. Remains of small circular wig, with earlier hearth exposed in centre.



1. Remains of pre-wag circular hearth.



2. Built platform of boulders, from south.

ALEXANDER O. CURLE.



1. View of platform from S.E. angle.



2. Base of outer wall continuing northward into unexplored ground.



1. Cist exposed in centre of platform.



2. Boulders exposed when covers lifted.

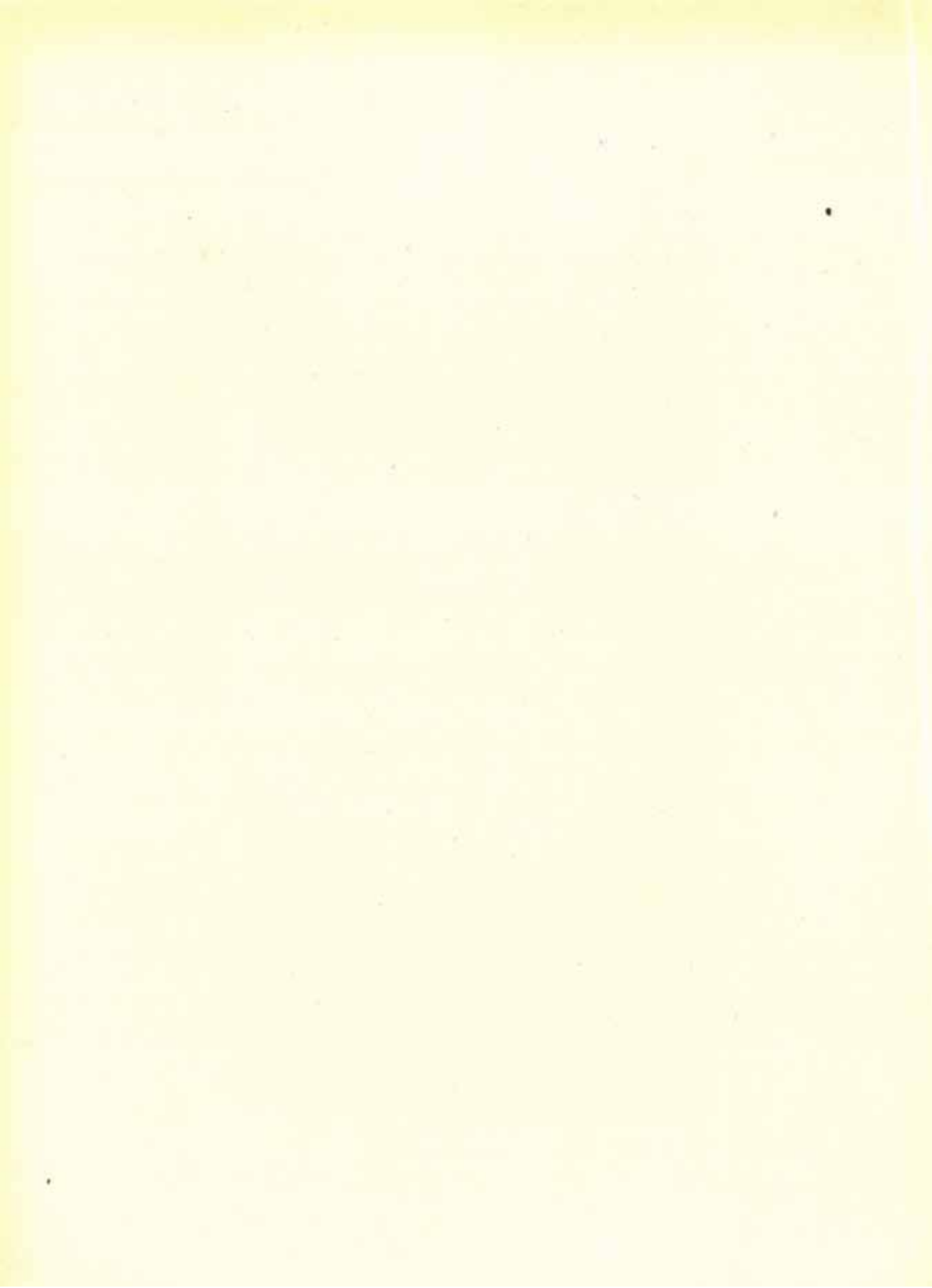
ALEXANDER O. CURLE.



1. View of west front, showing basin in left foreground.



2. South aspect, showing channel passing beneath paving slab subsequently destroyed.



its length, and at the north end a single stone appeared to have been displaced (see plan, fig. 2). A slight disturbance had also occurred on the west face. At the south-west corner it approached close to the enclosing wall, which seemed to terminate at that point with one or two large stones. Along the west front the subsequent wag buildings had evidently interfered with whatever building may have been there. From the north-west angle large blocks of stone had been laid to make contact with the outcropping rock on which the wags were subsequently built. The structure appeared to have been laid to some extent on a paving of large flagstones, round the outer limit of which, from south to east, ran a kerb of boulders indicating the former existence of a boundary of some sort. Towards the north this setting of boulders was carried onwards into an unexcavated area. Outside the boulders the base of the containing wall, which started from the south-west angle, was continued northwards in a sharp curve also to an indefinite distance (Pl. XLVIII, 2). In the centre of the surface of the construction there were two heavy slabs, carefully laid in line, and lying so level as to militate against any suggestion that they had ever been displaced. On raising these a cist was exposed formed of boulders (Pl. XLIX, 1), with its floor on the rock, and measuring on floor-level 3 feet 4 inches in length by 1 foot 6 inches in breadth at the centre, $9\frac{1}{2}$ inches at the south end and 1 foot 9 inches at the north end. A curious feature was a recess, immediately beneath the covers on the west side, measuring 1 foot 5 inches across the opening, $10\frac{1}{2}$ inches in height and $8\frac{1}{2}$ inches in depth, with the constructional boulders forming the sides, but with a neat filling of small, flat pieces of stone, set vertically, to form the back. Within this recess lay a much decomposed fragment of a sheep's jaw and two sheep teeth. The cist itself was entirely occupied by two very heavy boulders (Pl. XLIX, 2), filling it so closely that their temporary removal in order to examine the interior was a matter of considerable difficulty. Upon the floor there was no trace of an interment of any kind. A very few particles of charcoal were observed when it was first examined in 1947, but in the more particular examination made in 1948 nothing of the sort was found. At the base of the structure on the exterior, to south and east, channels had been formed as if for water, that on the east passing beneath a lintel on leaving the building (Pl. L, 1), that on the south formed in the surface soil (Pl. L, 2) and covered by a large paving-stone. There were no openings in the walls of the cist which could have connected with these channels, nor in the beds of the channels themselves were there any traces of sediment, such as would probably have been deposited had water flowed through them. The irregular outline of the building on the south front had probably been brought about by the removal of two or three boulders in the original face of the wall, in which case the flagstone must have been laid before the formation of the structure.

To the east and south of the building, bounded by the kerb on the south and originally in all probability on the east, there is an area paved for the greater part with large flagstones. Its irregular outline clearly suggests that it had originally extended over a wider area.

In the centre of the east pavement, the channel from the structure on that face is carried forward into a shallow, oblong basin, outlined with boulders and evidently paved on the floor, though one-half of the flooring had in the past been removed. This basin, and the channel by which it had been fed, measured 6 feet in length and 1 foot 6 inches in breadth. The channel at the south end passed underneath a large slab of Caithness "slate" on to the open ground beyond. At the north end of the building and on its east side there was a circular slab, evidently a hearth, with an upright flagstone erected against the building to act as a fireback. A roughly chipped stone potlid and several sherds of cooking-pots were found on and in the immediate neighbourhood of the hearth. The fact that this hearthstone is partially beneath the boulders, and that certain of the other flagstones appear to be similarly placed, seems to indicate that the construction, whatever its purpose, had been erected on a previously occupied area.

That area had evidently been confined within an arc of a circle formed by boulders having a radius of some 17 feet, centred on the north end of the building. Evidence of continuous occupation was furnished by the discoloration of the floor and by the numerous sherds of cooking-pots found upon it. A few feet farther out than the above-mentioned arc of boulders there is the base of a wall, not concentric, and evidently a continuation from the wall-base starting at the south-west corner of the construction.

Circumstances did not permit of the complete examination of the site, but the general indication is that the structure, whatever its purpose, had been erected on a dwelling-site, as evidenced by the discoloration of the soil covering the floor and the sherds of cooking-pots found upon it. The kerb of boulders appears to be related to the structure, while the wall foundation outside it was possibly connected with the original dwelling.

As the remains above described are evidently but a small part of an Early Iron Age site, extending along the eastern edge of the rocky outcrop on which the wags are built, it is very much to be hoped that some day it may be thoroughly examined and also that the wags be cleared out. In the meantime it is much to be regretted that, failing any protection, considerable damage was caused to the monument in the interval between cessation of work in 1947 and resumption in 1948. The cist had been opened, and the interesting pocket, or recess, on the west side had been completely destroyed; the channel on the south had been opened up and the flagstone which covered it broken in fragments; stones on the surface of the structure had been displaced and the outline of the basin interfered with.

In the absence of any ascertained analogy, it is not possible to determine with any certainty what purpose was served by this unique construction. A few facts, however, suggesting a solution have emerged. In the first place, the cist in the centre was undoubtedly a part of the original construction, the space having been left, or the outline of the cist having been formed with boulders, and the "cairn" built around it. The shape of the cist suggested its having been intended for the extended burial by inhumation of a person of short stature. From the complete absence, however, of any trace of a burial in any form, as well as by the filling of the cist with two large boulders, the presumption is that no burial had taken place. As already mentioned, the size and shape of the boulders, selected obviously to fill the space, indicate that this was a primary arrangement. The idea of burial is further arguable from the small pocket, or recess, which was found containing the remains of food, directly under the covers. The presumption is, then, that we have here a cenotaph to some notable person, whose remains were not recoverable, perhaps lost at sea or in the stress of battle. But this conclusion leaves quite unexplained the two channels, presumably for liquid and not air, from the existence of the basin formed in the paving into which one was directed. The floor of the cist being the "living" rock, and there being no sign of any water rising through it, disposes of the idea of drainage. One is unwilling to advance a theory which cannot be justified from any parallel discovery in Scotland, but the idea of sacrifice as a religious rite over the tomb, cannot be left out of consideration. The general impression obtained when the structure was uncovered, that the building had not originally been raised higher than the level of the cist-covers, is another curious feature. If the theory that this was a tomb be accepted, how is the character of the occupation of the area on which it was erected to be explained? The surface was considerably discoloured, and there were a number of fragments of cooking-pots recovered from it, while the hearth backed by a large flag was actually placed against the building, thus suggesting a continued domestic occupation of the site. Such are the facts which further exploration in the vicinity may possibly explain.

THE RELICS.

As was to be expected from the purpose of the main buildings, the relics were few in number; in fact most of those actually relating to the occupation of the wags came from the solitary domestic site associated with the Wag, A on plan, excavated in 1939. Many of the other finds came from the pre-wag occupation of the ground at the edge of the outcropping rock on the east front. The great majority of objects found were hammer-stones, large pebbles of ovoid and sometimes spherical shape, of a size such

as a man could grasp in his hand, worn down usually at both ends to a bifacial rounded surface, intersected frequently by a sharp edge. As a rule the surfaces are fairly smooth and not heavily pitted, while their general appearance suggests that they may have been produced by glancing blows, for even in primitive dry-stone masonry it must have been necessary at times to remove slight protuberances so as to effect stability in building. Though such may have been one of the purposes for which these hammer-stones were used, and while some of those found had been split lengthways, lending weight to this suggestion, it hardly furnishes an explanation for their numbers. It must be remembered that only one of the wags was actually cleared to floor-level, and that from its floor no hammer-stones were recovered; though some were actually found within the circular dwelling (C on plan) connected with it, while four came from an area which appeared to have been used as a refuse dump in area E outside and accessible from it. From the fact that the worn surfaces are occasionally very smooth and curved in both directions, it seems probable that they were also used as rubbers on saddle-querns, especially as no other implement was found which seemed intended for such a purpose. Perhaps, as was the case with the stone implements of an earlier age, they were universal tools, to be used for any purpose to which they could be applied.

As for the age to which they belonged, it is significant that while twenty-eight were found, only nine were found on levels referable to the period of the wag occupation, and of the remaining nineteen, two were found in the intermediate level beneath the floor of the small wag in H, which, however, was of small extent, and the rest came from the lowest level of the ex-wag area, and at the same relative level on the early floor discovered beneath the hut-circle O.

This distribution appears to indicate an earlier period for their greater use, but it must be remembered that the ex-wag was the largest domestic site uncovered. The early period for the use of such hammer-stones is, however, borne out by the finds on Traprain Law, where all such relics belonged entirely to the lowest and pre-Roman level. Numerous pounders or hammer-stones were found throughout the excavation of the prehistoric group at Jarlshof, with a preponderance in the later or Iron Age levels.

A segment of a circular object of lignite was found at wag-level outside the entrance to Wag E. A fragment of a broad ring of the same material was found at the entrance to Wag N. A roughly fashioned segment of another, possibly an armlet, with an indicated diameter of $3\frac{1}{4}$ inches, was found at the level of the intermediate hearth in R, while another segment of a possible armlet of the same material, with indicated diameter of 4 inches, was found at ex-wag level while tracing the pavement towards the east.

A discoid bead of sandstone, already referred to, was found with potsherds and hammer-stones in the area above mentioned outside the circular

chamber D, seemingly used as a refuse dump from the dwelling C of the wag period.

Pottery.—Potsherds were recovered from all of the three levels of occupation, those from the lowest being most abundant, and those from the second, occurring beneath the small wag, the most distinctive.

The pottery from the wag-level came almost solely from outside the wall of area D. Several sherds of thick dark cooking-pot (fig. 3, 7), having large chips of flint-like material in the body, comprised most of it, one particular sherd being ornamented with deep finger-print or punch-made impressions under the rim, probably a part of the same vessel as a potsherd found in the adjacent dwelling (C) in 1939.

The pottery from the second level came from the heap of peat-ash which lay on the east side of the hearth below the small wag in H, while one remarkable sherd with trailed decoration and applied cordon (fig. 3, 2), found among the stones which overlay the ex-wag construction was evidently of the same period. A small fragment found also among the peat-ash of the second level in H has a cordon below the rim inside, and finger tip impressions outside (fig. 3, 5). A sherd ornamented with a reticulated pattern in grooved lines was found in the same situation. Pottery which came from the isolated hearth below the herdsman's cabin K (fig. 3, 8), and on an early floor-level 1 foot 9 inches beneath that of the later bee-hive dwelling O (fig. 3, 1) and from the ex-wag level (fig. 3, 4-5, 9-10), was for the most part remains of coarse, heavy cooking-pots with everted rims and an ogee profile.

Only one spinning-whorl was found, and that at a high level, on clearing ground above the ex-wag area, and therefore of no significance.

In conclusion I must again thank Dr Sinclair for permitting the continued excavation and for presenting most of the relics to the National Museum, with a sample to Wick Museum; Colonel McClintock for bringing the plan up to date, and Mr H. A. P. Rowland, surveyor, of Liverpool, for planning the ex-wag area exposed after Colonel McClintock's departure. My thanks are also due to Professor Pearson, of the University of Durham, who through the kind offices of Dr Allan, Director of the Royal Scottish Museum, examined the slag found in the occupied site adjacent to the early construction. Lastly, I gratefully acknowledge the financial assistance from the Council of the Society which allowed the excavations to be carried out. I was again fortunate in having our Corresponding Member, Mr Simon Bremner, to act as my foreman.

NOTES.

1. THE ACRE EXTENT OF THE MERKLAND.

(See also article on p. 49.)

In a previous communication to the *Proceedings* of this Society on the subject of Land Denominations, I quoted the historian, E. W. Robertson, as saying of the ancient measure known as the merkland: "Any attempt to estimate its area in acres might be more ingenious than satisfactory." Other nineteenth-century authorities, however, have confidently asserted that it could be expressed as having a definite and constant acreage. Thus Cosmo Innes¹ wrote: "A ploughgate of land is found to have been rentalled in the old extent (which is nothing else but a rental of the times of the Alexanders) as three merks or forty shillings . . . observe the forty-shilling land is the same as a three merkland; but knowing that a forty-shilling land or three merkland is a ploughgate averaging 104 acres, we find that a merkland ought to be on an average $34\frac{2}{3}$ acres." Later writers, taking their cue from this statement, still occasionally tell us that a merkland was "about 35 acres."

Commenting on old extent, W. F. Skene² wrote that "in the eastern districts it corresponded so far with the land measures that the ploughgate was the same as a forty shilling land or a three merkland"; and in a footnote he observes that "Mr Innes was the first to discover this important analogy." Actually he was forestalled by more than half a century by Dr John Smith, author of the *General View*³ of the agriculture of Argyllshire (1798), who put the matter as follows: "By a decree of the Exchequer (March 11th, 1585) a 40 shilling (or 3 merkland) of old extent (or 8 oxgangs) should contain 104 acres. Consequently a one merkland should be $33\frac{1}{3}$ acres." The slip in arithmetic ($33\frac{1}{3}$ instead of $34\frac{2}{3}$) made by the reverend doctor may pass, but had he examined some of the contemporary rentals of the county of which he was writing an account he would have discovered how very far out this equation was.

The above acre-figure for the merkland was derived from two sets of data: first, the 104 acres for the standard ploughgate, as specified in one of the early statutes, and second, the 40 shilling extent of such a ploughgate as decreed by the Act of Exchequer referred to by Dr Smith. The law, however, is apt to proceed on the maxim *de minimis non curat lex*, and to assume a uniformity which did not exist in actual practice. It can be shown that these data did not represent constant values.

It is therefore desirable to turn for more reliable information to actual documents, such as rentals, which exhibit the usages in force at the time when they were compiled.

One of the earliest Scottish rentals is that of the Priory of Coldingham for the year 1298.⁴ The Priory lands at that date consisted of a number of "vills" or townships, situated in the countryside lying between Coldingham and Kelso, the land of which was mainly arable, and measured in Northumbrian carucates or ploughgates, subdivided into bovates or oxgangs. The rental shows that, while there were invariably eight bovates in a carucate, the number of acres in

¹ *Legal Antiquities*, p. 370.² p. 31.³ *Celtic Scotland*, vol. iii. p. 226.⁴ *Surtees Society*, vol. xii. pp. lxxv et seq.

the bovatc varied not only from vill to vill, but even within one and the same vill. Thus, in Swinton, there were $13\frac{1}{2}$ acres in a bovatc of the demesne, but only $11\frac{1}{2}$ in a bovatc of the husbandlands. In Fishwick there were $12\frac{1}{2}$ acres in the bovatc; in Ederham only 10; in Lower Ayton 14, and in Upper Ayton 8 only. Hence the bovatc in Coldingham varied between 8 and 14 acres, and so the carucate between 64 and 112 acres, a variation representing 75 per cent. between the extremes. The attempt to standardize the ploughgate, like so many other attempts at standardisation, had clearly not been successful, and so the area of a merkland on this estate fluctuated between 21 and 37 acres. Only when the bovatc was an exact 13 acres and all the land arable was the figure of $34\frac{1}{2}$ acres for the merkland correct, and this equation was probably adopted arbitrarily, as a kind of average for arable land in the Lothians, and on grounds of administrative expediency.

When we turn to the bleak mountains of the Highlands we find a very different state of affairs. Material for the study of the question there exists in abundance in the rentals¹ of those Highland chiefs who were forfeited for their part in the risings of 1715 and 1745. In certain cases these rentals, prepared from the sworn depositions of tenants by government surveyors, are expressed in merklands; in others in pennylands. The rentals cover all the most important clan lands in the Hebrides, and in the mainland counties of the West Highlands. After the estates fell into the hands of government they were, in certain cases, surveyed in acres, with a view to their improvement by enclosure, and it is therefore possible to put side by side the merkland extents with the corresponding figures in acres. The townships over the Lochiel estate will serve as well as those of any other for our present purpose. On that estate Muirlaggan, a $1\frac{1}{2}$ merkland, paid a rent of £104 10s. Scots, 2 quarts butter, 2 wedders, and 1 calf. When it was surveyed in acres its extent was found to be (1) corn land 4 acres, (2) grass and good pasture 9 acres, and (3) hill and moss 2779 acres. This gives an overall total of 2793 acres, and hence a value for the merkland of 1862 acres. The details for this and some other holdings on the same estate, arranged in tabular form, were as follows:

1.	2.	3.	4.	5.	6.
Name of Township.	Extent in merks.	Extent in acres.	Acres in a merkland.	No. of souns.	Souns per merkland.
Muirlaggan .	$1\frac{1}{2}$	2793	1862	86	57
Muick .	$1\frac{1}{2}$	4300	2866	58	38
Sallachan .	$1\frac{1}{2}$	2291	1527	42	28
Auchinsaul .	3	5609	1869	92	30
Glenpeanmore	$1\frac{1}{2}$	3767	2511	100	66
Mory .	2	791	395	64	32

The surveyors also made a fresh estimate of the value of each township, using as their unit the *soum*, or grazing of a single cow, valued at an average of 5s. sterling the *soum*. An examination of the above table will show (1) that, in the

¹ *Forfeited Estates Papers*, H.M. Register House.

Highlands, the merkland area might extend to thousands of acres; (2) that there was no constant figure either for the number of acres in a merkland, or for its value in *soums*. No doubt, when the extent in merklands was first made, all merklands were approximately equal in value, but this had ceased to be the case at the date of these rentals.

What has been said here about the merkland holds equally well for the pennyland. It is clear that, by the eighteenth century, these ancient measures had become obsolete, and more or less useless as accurate measures of land. Towards the end of the century they were replaced by acre measurement all over Scotland.

A. MCKERRAL.

2. TWO CHOIR STALLS OF OAK AND PART OF A PAINTED WOODEN PANEL FROM LINCLUDEN COLLEGIATE CHURCH, KIRKCUDBRIGHTSHIRE.

These interesting stalls, hitherto in the "Queir" at Terregles, have been deposited in the Museum on loan by Captain Maxwell-Stuart of Traquair, and the panel is on loan from Dumfries Burgh Museum,¹ which retains part of another panel and a pilaster of another stall. They were described by James Barbour in 1883,² and were noted in the *Archæological Collections of Ayr and Galloway*³ (with drawings by Macgibbon and Ross) and by the Historical Monuments Commission.⁴

Lincluden was re-founded as a Collegiate Church a few years before 1400 by Archibald the Grim, 3rd Earl of Douglas. Calderwood⁵ says that John, Lord Maxwell, celebrated Mass in Lincluden Kirk at Christmas 1585, being charged to appear before the Privy Council for so doing. It would seem possible that about this date, or shortly before, the stalls were transferred to Terregles Parish Church, scarcely three miles away, and placed in the "Queir," which had been built as a burial-place⁶ by Sir John Maxwell, 4th Lord Herries, uncle of Lord Maxwell. Lord Herries died on 20th January 1583.⁷ There is a stone with the date 1585 on it in the Queir, which may be the year in which the Queir was completed.⁸ The close connection of the Maxwells with Lincluden and Terregles no doubt accounts for the preservation of the stalls in the Queir, where they were long known as "the Provost's Chair of Lincluden."⁹ When the Queir was restored in 1875,¹⁰ the painted panels were discovered forming the back of the stalls. Probably they had been hidden from over-zealous Reformers.

The lower parts of both stalls, ends, backs, elbows and misericords are complete apart from small renewals where the wood has been badly worm-eaten, and they stand on a modern base. Of the upper framework only the three buttress-pilasters remain, grooved on the inner sides to take the flanges of the painted

¹ *Proc. Soc. Ant. Scot.*, vol. lxxxi. p. 204.

² *Trans. Dumfriesshire and Galloway Nat. Hist. and Ant. Soc.* (Session 1883-84), p. 31.

³ Vol. x. pp. 164-7.

⁴ *Inventory of Monuments and Constructions in Galloway*, vol. ii. p. 250.

⁵ *History of the Kirk of Scotland* (Woodrow Soc. 1843), vol. iv. p. 489; cf. also *Calendar of Border Papers*, vol. i, Nos. 404, 409.

⁶ Sir W. Fraser, *The Book of Caerlaverock*, vol. i. p. 569.

⁷ Calderwood, *op. cit.* vol. viii. p. 232.

⁸ *Inventory*, p. 253; Macgibbon and Ross, *Ecc. Arch.*, vol. iii. p. 615.

⁹ *New Statistical Account, Kirkcudbrightshire*, p. 232.

¹⁰ The date 1875 and a joiner's name are carved on one of the new base-blocks.

panels. The upper rail is a modern addition, but probably there was a canopied top.¹ The stalls are 9 feet in height.

In style the carvings belong to the fifteenth century. The handrests, with stylized leaf carving, are much decayed, but the misericords, 2 feet 2.25 inches \times 11.25 inches, are in excellent preservation (Pl. LI). On 13.5 inch brackets are spirited carvings, one a serpent face with curved chin, staring eyes and pointed ears, an M-shaped body and two webbed front claws. In middle of body are depressions which may be decorative, and the underside is stamped with six pointed stars with blunt ends, all identical and each measuring 0.4 inch across. The other beast has a full maned lion head with almost human features, no front legs and webbed rear claws. The pilasters, 5 feet 6.75 inches, are decorated with crockets and finials. The outer ones have two miniature carved canopies over four-sided pillars placed edgewise and having a central moulding. On the middle pillar the upper canopy is more ornate, and under it is a bracketed niche 9 inches high. Two holes at the back of the niche confirm that it has held a statuette. The pilaster in Dumfries Museum is of this type.

The panel, also of oak, 5 feet 6.75 inches \times 1 foot 3.4 inches \times 0.75 inch, and made of two planks, the third being missing, is intended to be placed between the pilasters. When the begrimed surface was cleaned in the Museum no traces of pigment were found, but the surface of the wood is raised, "embossed" as it were, where it has been protected by paint, sufficiently to show that it depicted a crowned female figure with long plaited hair. Her left arm is across her body, and she is wearing a gown, with a mantle of a different colour, fastened at the throat by a flat circular brooch. The crown has alternating fleur-de-lis and short points. The colouring was apparently good enough in 1883 for Barbour to give a detailed description:² yellow hair, inner garment reddish brown, mantle wholly blue, with yellow border and white lining. The other authorities already quoted, writing in 1899³ and 1911,⁴ follow Barbour, but say without qualification that the upper part of the dress is blue. Barbour identified the figure as the Virgin Mary, to whom the College was dedicated.

STUART MAXWELL, *Assistant Keeper of the Museum.*

3. TWO EARLY EIGHTEENTH-CENTURY NECKSLIDES.

The mourning neckslide illustrated in Pl. LI, 3 has been presented to the Museum by Miss E. B. Henderson, F.S.A. Scot. The gold bezel contains a crystal, beneath which, on a background of hair surrounded with gold wire and edged with blue, are a white and black skull and cross-bones and the initials PM in gold wire; on the back is inscribed ob: Febru: 17 1703. The border, set with ten pearls, is of silver, enamelled on the back in white, black and pink (size 21 \times 18 mm.). Two similar ornaments were described and illustrated in the *Proceedings*, vol. lvii. p. 238.

A contemporary neckslide in another style is also illustrated, after being exhibited to the Society through the kindness of Lady Broun Lindsay, F.S.A. Scot., who recently described it and the tragedy it commemorates.⁵ The Laird of

¹ Barbour, etc.

² *Op. cit.*

³ *Archæological Collections.*

⁴ *Inventory.*

⁵ *Trans. East Lothian Antiquarian Soc.*, vol. iv. (1948), p. 27.

Colstoun and his two small boys were drowned in 1703. Their initials, ages and the date are engraved on the back, and their initials in wire under the crystal on the front overlie a woven background of hair of three colours (size 23.5 × 21.5 mm.).

R. B. K. STEVENSON, *Keeper of the Museum.*

4. CARVED OAK PANELS FORMERLY AT GREENLAW, KIRKCUDBRIGHTSHIRE.

The recently acquired panels,¹ illustrated in Pl. LII, are of a fine-grained oak. They are said to have been part of a bed, but were made into a bookcase about 1830, by the well-known antiquary and friend of Scott, Joseph Train, who recounted their history in two notes, one in Mackenzie's *History of Galloway*,² the other in the *New Statistical Account*.³ The tradition was that they had been successively at Threave, Lochinvar, Kenmure and Greenlaw. They were recently referred to in an article in the *Scots Magazine*⁴ by a descendant of Train, Miss Marjory T. Dunn, in whose possession they latterly were. As will be shown, the earliest part of the story, to the effect that the bed came from Threave Castle and was the property of the "Black Earl" of Douglas, who died in 1452, must be dismissed as legendary.

The case, as it stands, is in two sections, with a cornice on three sides, and measures 9 feet 5 inches × 4 feet 3 inches × 1 foot 1.5 inch. The old panels and their moulded frames form the two sets of doors and the sides of the upper section. The carvings on the sides of the lower section and on the front of the cornice have been inset in new wood at the reconstruction, when new material was used as unobtrusively as possible. Parts of the woodwork have been scorched by contact with something hot, perhaps in the blacksmith's shop where they were found in the eighteenth century.

The lower door panels, two to a door with mouldings between and round them, have five interlacing ribbon patterns in low relief, one above the other and all different. The upper door panels, similarly placed, each have three human figures in low relief, one above the other: acrobats, musicians and soldiers, in late sixteenth-century costume. Each side of the upper section has two panels, both with a head in a roundel over a three-quarter-length figure. The cornice has three armed horsemen in low relief, inset in panels of new wood and surrounded by guilloche mouldings. The interlaced designs average 6 × 6.5 inches, the horsemen 10 × 7.75 inches, and the figures vary from 9 to 13.5 inches, the tallest being the Fiddler.

Inset in the lower of the two new panels forming the sides of the lower section of the case are two oak panels, 21.25 × 4.05 inches, of coarser grain than the others, and much worm-eaten. They are done in a kind of chip carving with free use of a gouge; on one side thistles on a stalk, on the other, roses. There seems to be no good reason to connect these with the other panels of the case.

The interlaced designs are well drawn if rather crowded, but the figures are child-like. With the exception of the Piper, all the heads are in profile, and in every case the carver has emphasised the cheek-bone and has had considerable difficulty in placing the eye, which appears in the middle of the temple as well as in its right place. It looks as if he had failed to understand that in the design

¹ P. 321.

² *Kirkcudbrightshire*, note, pp. 183-4.

³ Vol. II. (*infra*, 184). Appendix, p. 68.

⁴ July 1938, p. 255.

given to him the small nick at the top of the nose was all that was necessary to indicate so important a feature as the eye. Two of the soldiers, one on each side, carry muskets, and another has two pistols. These, and the Fiddler, were overlooked by Train when he dated the bed to the fifteenth century.

There are six different types of mouldings, with slight variations, among those which outline the panels, and each occurs on at least two of the separate parts of the case. This is not, however, sufficient evidence that the rude figure carvings of the upper doors, sides and cornice are by the same craftsman who carved the geometric designs of the lower section: a stronger link is the fact that the small crosses (+) stamped on parts of the clothing of eleven of the figures occur also on two of the interlaced patterns (second and third from the top, inner panel of the right door), and on the guilloche mouldings of the cornice. The arms of the crosses are 0.2 inch long, some are placed upright, some diagonally, and the stamping is blurred at the intersection of the arms. That these are contemporary with the figure carvings is proved by the fact that similar stamps of the same size occur on the door from Amisfield Tower, Dumfriesshire,¹ also in the Museum, which is dated 1600. There is no blurring in those stamps—each one has been most carefully done, and all are upright. They have been used to decorate the edges of Samson's garments, his collar, and the band of his hat—the bell-like object above the lion. There seems no reason to doubt, therefore, that all the carving on the case, with the exception of the thistles and roses, was done by the same craftsman.

Another oak door, originally in Terregles House, Dumfriesshire, now at Traquair House, and identified as by the same hand as the door from Amisfield, was described in the *Proceedings* a few years ago.² Permission to inspect the Terregles door was kindly given by Captain F. J. Maxwell-Stuart of Traquair, and it was found that the same crosses had also been stamped on it. There is no human figure this time, but the crosses decorate the unicorn's collar, the lion's mane, the howdah, and the roundel containing the initials and date (1601). It may be noted that the roundels on the sides of the bookcase are similarly stamped. The Terregles door is of a fine-grained oak, much more like, in its present condition at least, the panels than the coarse-weathered oak of the door in the Museum. Grose³ says that the Amisfield door was "most barbarously painted" and small patches of the paint remain. The Greenlaw panels showed traces of red lead in cleaning, on the background, not on the figures, suggesting it also had been painted at some stage. It is most improbable that the figures were ever painted, for surely paint would have obscured the stamped crosses completely, and nullified their decorative purpose.

Quite apart from the stamps, the figures on the Greenlaw panels are of the same type as that of Samson on the Amisfield door. Their hair is treated in exactly the same manner, and the Amisfield carver was not at all happy in his treatment of the eye, though more successful than in the Greenlaw case. Warrack suggested in his Rhind Lectures for 1919-20⁴ that the similarity between the Amisfield door and the Greenlaw panels "points to the existence of an untrained native artist in Dumfries and Galloway in the sixteenth century," and Mr Ian Finlay in his recent book, *Scottish Crafts*, links all three pieces together.⁵ Dr J. S. Richardson tells me that the stamping is a leather-worker's device, and would

¹ *Inventory of Ancient and Historical Monuments and Constructions in the County of Dumfries*, p. 108.

² *Proc. Soc. Ant. Scot.*, vol. lxxvi. p. 7, and Pl. III.

³ *Antiquities of Scotland*, vol. i. p. 158.

⁴ *Domestic Life in Scotland, 1488-1688*, pp. 78-9.

⁵ *Ibid.*, pp. 55-6.

not be found in better quality carving. Again this supports the theory that we have the work of "some rural worker, perhaps a carpenter by trade,"¹ copying better work, for decorative cutting, not stamping, is often found on sixteenth-century carving, especially on the clothes of figures in relief. The Amisfield door crosses however seem too sharp for leather, which would be cut by them, but it is possible that the coarse grain of the wood is responsible for their present sharpness.

The very fine oak pulpit from Parton Church, Kirkcudbrightshire, dated 1598, also in the Museum, has certain features which suggest that, if not the work of the same school, it has influenced the Dumfriesshire carver(s). The upper part of the pulpit has panels decorated mainly with floral designs, but also by two interlacing ribbon patterns, each forming two entwined hearts, one upside down. This occurs once on the bookcase (top, inner panel of left door). The pulpit carvings measure 6.5 x 7.5 inches, the case 6.25 inches square. The order in which the ribbon passes over and under itself, the same on both the pulpit designs, is reversed on the bookcase, but in the manner of carving they are alike. Similar mouldings also are repeated on both, notably rope-work and guilloche.

STUART MAXWELL, *Assistant Keeper of the Museum.*

5. NOTES ON SOME PREHISTORIC OBJECTS.

A hoard of *flat bronze axes* was found under a stone by Mr R. I. Fraser while working in 1947 at a Forestry Commission quarry at about 1000 feet O.D. far up a glen north-west of Tap o' Noth in the parish of Rhynie, Aberdeenshire. The site (Nat. Grid ref. 38/451308) was at the foot of the Hill of Finglenny, some 750 yards before the Ealaiche Burn joins the Kirkney Water and, more precisely, equidistant between but a little uphill from what are marked on the O.S. six-inch map as Burnside and Tumulus (supposed) (Aberdeenshire, 1902, XXXIII, S.E.).

The axes (Pl. LIII, 1) retain in parts the original golden or tin-coloured surface of the bronze, and have also green patches of patina, but they are in other places corroded, so that two have lost part of their cutting edge. All have the same shape—rounded butt, flaring sides and flat undecorated surfaces bevelled to form the strongly curved blade. They were, however, cast in at least several different moulds, the largest being 6.8 inches long and the shortest 5.35 inches. With the axes there was a bronze object like a buckle which, unfortunately, was thrown away by one of the workers. Six of the axes were carefully preserved by Mr Fraser, who brought them back to his home at Lumsden. There they were shown to Mr John Caseby of the Schoolhouse, who told our Fellow, Dr Douglas Simpson, of their existence. Our thanks are due to them all, and to H.M. Forestry Commission, who presented the six axes to the National Museum, and who later were able to claim the seventh and add it to the others.

One curious point is worth noting. Three of these axes had been snapped in half before being hidden. Now as many as seven such axes are known to have been found together only twice before in Scotland,² both times in Banffshire. Of these, the hoard from Colleopard is preserved in the Museum, and three of its axes have been snapped in two. The only one in our collection from the Hill of Fortrie of Balnoon is a similar half-axis. Broken flat axes are

¹ *Scottish Crafts*, p. 55.

² *Proc Soc. Ant. Scot.*, vol. lvii, (1922-23), p. 127.

not common, for there are only four others among the remainder in the Museum. And despite one of the technical reasons usually given in explanation of the development of the flanged type of axe—that it was less liable to buckle in use—only one of our flat axes is bent in the middle. It is tempting to interpret these facts as evidence that each of the three hoards was a religious or magical offering, of which some of the objects were deliberately destroyed.

As *carved stone balls* continue to baffle and intrigue archaeologists, it may be of interest to note a second instance of one being found well outside Scotland,¹ though it throws no light on their purpose or date.²

An entirely typical ball with six knobs and about 2·8 inches in diameter was acquired in 1946 by the museum at Trondheim, Norway, having come from Lindås, in the parish of Aure, Nordmøre.³ Dr Petersen has kindly written, in reply to an inquiry, that the ball is stated by the finder to have been discovered on the subsoil 1·5 metre below the surface of an oblong cairn. The cairn measured about 15 metres in length, and lay 15 to 20 metres above the level of the adjacent sea. It was at first thought to be a burial cairn of Viking date or earlier but now is regarded as a clearance cairn.

No doubt the ball was originally picked up in Scotland, but from the circumstances of the find it would seem that it was brought to Norway as a curiosity not less than several centuries ago.

The penannular *gold armlet* illustrated in Pl. LIV, 1 was found in 1941 hidden in the structure of a shed which was being dismantled at a tile-works on the Logan Estate, Kirkmaiden, near the Mull of Galloway. When or how it got there is unknown, but it may be presumed to have been unearthed in the adjacent clay-pit or in the sand brought to the tilery from the shore close by. The discovery was, unfortunately, not known to the Society or to the Exchequer, by whom the armlet would have been claimed as treasure-trove. It passed into the possession of the late Mr A. K. McDouall of Logan, and was included in the sale of his collection in London in April 1948, and is understood to have gone to California,⁴ having fetched a price greatly in excess of what any museum in this country was prepared to pay.

Such armlets, consisting of a solid metal bar expanded at the ends, are thought to have been manufactured in Ireland during the Late Bronze Age; and Logan is almost the nearest landfall in Scotland from that country. A number of gold examples found in Scotland are preserved in the National Museum.

The *torc* shown in Pl. LIII, 2 is thought to have been found near Dungyle Camp, Kelton, Dumfriesshire (see p. 321), though unfortunately it is not mentioned in John Train's list in Mackenzie's *History of Galloway*.⁵ It is about 5·5 inches in diameter, and consists of a solid bronze rod of circular cross-section, which becomes thicker as it approaches the two buffer-shaped ends. The latter are slightly oval in outline (diam. c. .6 inch), and are emphasised by a preceding constriction of the rod; some oblique decorative lines are discernible on their edges. From the centre of one buffer a stout *iron* pin projects .35 inch, and fits into a mortise in the opposite buffer. One-third of the way round the hoop there is a similar arrangement, where the rod itself forms on one side a thin-

¹ The first is one found at Ballymena, Co. Antrim: *British Museum Iron Age Guide*, 1925, p. 157.

² Now thought to be Early Bronze Age.

³ K. Norske Videnskabers Selskab: *Museet årsberetning for 1946*, p. 22 and *Oldsaksamlingens Tilvekst*, 1946-47, p. 8.

⁴ Thus following the unique gold Roman brooch from Erickstanebrae, Dumfriesshire, described in *Proc. Soc. Ant. Scot.*, vol. lxvi, pp. 370-1.

⁵ Vol. II. (1841), App., pp. 63-72, of which items 14, 16 and 18 are now in the Museum.

walled tube (now partly broken away), and on the other is constricted to form a tenon .35 inch long.

Collars of this nature in many varieties of elaboration and detail were a characteristic ornament of the Celts.¹ Torcs formed of simple penannular rods with or without buffer ends depend for opening on the natural springiness of the metal, and the ends do not usually fasten into one another. On the other hand, the device of opening the torc by means of a movable segment is normal in the case of the more elaborate cast bronze types (Déchelette's 5 and 6), though so exceptional in the simpler that, as Mr J. W. Brailsford kindly reports, there is no instance in the British Museum collection which includes a large number from the Marne. Movable segments fastened by tongue-and-socket joints are normal on the heavy beaded torcs which Mr F. G. Simpson and Dr I. A. Richmond note² are typical of the area in Northern England and Southern Scotland which was dominated by the Brigantes: three are from Scotland, where the Kelton torc seems to be the only example of the simpler type. Our Lamberton Moor beaded torc has been recently photographed to show the fastening (Pl. LIII, 3). Its tenons are of bronze and the beaded part is solid, but the fragmentary example from Hyndford Crannog,³ recently cleaned and deposited in the Museum, has its beads strung on a thin iron rod⁴ which may have projected to form tenons (Pl. LIII, 4). The combination of metals occurs again in the Benwell example, in which the bronze tube carrying the beads terminates in iron pins. It may be, therefore, that the Kelton torc represents a local application of the more elaborate fastening to a simpler type.

A Neolithic Vessel.—While sand was being dug from Oatslie Sandpit near Roslin, Midlothian, in January 1948, a small clay pot fell out of the face of the pit. Though its original position was not noticed it may have lain 3 to 4 feet below the surface, to judge by the rootlets and clean sand still adhering to it when brought into the Museum not long afterwards by Mr George Romanes. We are greatly indebted to him for adding it to the National Collection.

There was, before the opening of the sandpit, a gully cut by a burn which ran down south-eastwards towards the river North Esk. The pot was found about 120 yards south-west of Woodend Cottage and halfway up the slope of the north-east side of the gully, and over 150 feet above the Esk (Nat. Grid. ref. 36/266624). No other objects or traces of ancient occupation were noticed at the time, or since. (Black hearth-like deposits due to naturally disintegrated shale are common in the sand and gravel there.) The immediate surroundings of the find were dug away before the site was visited on behalf of the Museum.

The vessel (Pl. LIV, 2) is of rough grey fabric, 3.8 inches high with a rounded base. The rim is about .5 inch broad and squashed down so as to slope downwards from the inside, and to project both inside and out; its overall diameter is 5 inches. There is some sooty encrustation outside, and on the inside particularly in the bottom. This suggests domestic use.

Professor Piggott writes: "The vessel is of so simple a type that it is difficult to assess its position within the 'western' family of British neolithic pottery. In southern Scotland there seem to be two cultural traditions represented within this group—one of west coast origin, where it is normally associated with

¹ British Museum *Guide to Early Iron Age Antiquities*, (1925), pp. 60-3; Déchelette, *Manuel d'Archéologie*, vol. II. (1914), pp. 1207-17, also pp. 1332-47.

² *Arch. Aeliana*, 1941, pp. 23-5; list with references—add Tre'r Ceiri; *Arch. Camb.*, vol. VII. p. 40 (bronze gold-plated). There are distant continental prototypes, e.g. Déchelette, *cit.*, figs. 588-9.

³ *Proc. Soc. Ant. Scot.*, vol. XXXIII. (1898-99), p. 385.

⁴ cf. Lochar Moss, Perdeswell and Mowrood torcs.

chambered tombs of the Clyde-Carlingford group; and the other derived from the Yorkshire neolithic culture and related to its offshoots in Ulster. To this latter class belong the sherds from Bantaskine, Falkirk¹ and, further north, Easterton of Roseisle²: it occurs again at Glenluce³ and in a recently excavated chambered tomb at Cairnholy in the same region.⁴ But although this class of pottery includes plain roughly-made bowls, the Roslin vessel does not seem to be characteristically of this group: the rim-section in particular is not typical, being thickened and roughly bevelled unlike the thin beaded or hooked forms characteristic of the Yorkshire group, and its derivatives.

But the thickening and bevelling do recall the rims of the Scottish pots within the 'western' group from chambered cairns, *e.g.* Glecknabae, Bicker's Houses or Achnacree,⁵ though these are less roughly made and on better class pots. On the whole I would place the Roslin vessel within this group, and perhaps the bowl from Knappers⁶ might be cited as a west-coast parallel."

R. B. K. STEVENSON, *Keeper of the Museum.*

6. BEAKER FROM FETTERCAIRN.

A contractor engaged on government work digging in the grounds of Fettercairn House, Kincardineshire, in the summer of 1941, came upon the remains of an ancient urn. One piece, consisting of the base and rather less than half of the circumference, was rescued by Lieut. John D. Hamilton, the Royal Scots, who gave it to the late Mr J. T. Ewen of Pitscandly, not letting him know at the time the location of the find, for military reasons.

Details have, however, now been kindly communicated to the Museum by Mr Hamilton, following on the presentation of the urn by Mrs Ewen, with the approval of Lord Clinton of Fettercairn. The site was a sandy mound some 10 feet high by 20 feet in diameter, in a belt of trees (Strathwell Belt) to the west of the Cairn o' Mount road, opposite the Mains of Fasque (Nat. Grid ref. 37/653745).

The vessel is a rather squat and coarsely made beaker (Pl. LIV, 3), buff-coloured outside. Its estimated rim diameter is 5 inches, height 5 inches, base diameter 3 inches. On the bevelled rim it is decorated with radial finger-nail impressions, and outside with unserrated impressions in zones, five zones of three horizontal lines alternating with three cross-hatched zones. There is a grain impression on base; such impressions are in Scotland invariably barley.⁷

R. B. K. STEVENSON, *Keeper of the Museum.*

7. SHORT CIST AT KNOCKHILL, KIRKDEN, ANGUS.

On 18th February 1948 the coverstone of a short cist was discovered during ploughing on Captain Bruce Gardyne's estate of Middleton, near Friockheim.

¹ *Proc. Soc. Ant. Scot.*, vol. lxiii. (1928-29), pp. 56-7.

² *Ibid.*, p. 56.

³ *Ibid.*, p. 67, fig. 45.

⁴ To be published in *Proc. Soc. Ant. Scot.* shortly.

⁵ *Proc. Soc. Ant. Scot.*, vol. lxiii. (1928-29), p. 58, fig. 39.

⁶ P. 234.

⁷ *Proc. Soc. Ant. Scot.*, vol. lxxix. (1944-5), p. 167.

Angus. The cist was empty but for a food-vessel, which Mr Ernest Mackay, the ploughman, removed for safe keeping. Subsequently Mr F. A. Ferguson, F.S.A.Scot., visited the site, and some days later, at his invitation, I accompanied him to undertake a further examination. Our thanks are due to Mr Leslie, the tenant, for having kept the grave undisturbed.

Situated two-thirds of the way down a hillslope at about 350 O.D., the spot provides a relatively restricted view in undulating country. Cotton of Gardyne lies 350 yards to the north, and Knockhill Cottage less than 100 yards to the west (Nat. Grid ref. 37/577476).

The coverstone lay only a few inches below the surface, there being no trace of a tumulus, and was a single slab (an irregular parallelogram) of sandstone with a much-pitted surface, measuring 4 by $2\frac{1}{2}$ feet and about 2 inches thick. The cist was rhomboidal (Pl. LIV, 5), the main axis being N.N.W.-S.S.E. and the true bearing of the longest side 25° E. A small slab lay across the north corner, probably to level-up the cover. Three sides each consisted of a slab of pinkish-grey sandstone about 19 inches high (max. 21 inches) and at most $5\frac{1}{2}$ inches thick, which had clearly been obtained by splitting a single glacial erratic into three. Striae were very distinct on the inner side of the south-west slab, while the other flat surface of the block was the outer face of the north-west stone, the centre of the "sandwich" forming the north-east side. These sides measured internally 26, 25 and 33 inches respectively. The south-east, 21 inches long, was in contrast made up of half a dozen small slabs in three rows one behind the other, the largest stone being 16 inches long. Covered by a couple of inches of fine soil, in which no trace of bone remained, one stone formed the bottom of the cist 15 inches below the coverstone; it was roughly a right-angled triangle 24 by $18\frac{1}{2}$ inches, with the base at the south-east end. This stone rested on a layer of clean clayey sand 4 to 6 inches thick. The side stones, however, chiefly rested on the underlying gravel, like that against which they were backed. The layer was found to continue at least for a couple of feet beyond the south-east end, but further examination was not possible. It seems as if the cist-makers had simply incorporated a natural fluvio-glacial stratum, but Professor F. E. Zeuner notes that a sample had a looseness of texture that suggests, inconclusively, either an upper weathering horizon or spreading by man.

The food-vessel (Pl. LIV, 4), placed in the east corner, is reddish buff in colour, bowl-shaped and rather clumsy; height 4.9 inches, rim diameter 5.9 inches, base diameter 3.8 inches. The flat rim, $\frac{1}{2}$ inch thick, is decorated with two lines of cord impressions. Similar lines decorate the outside in five zones, with which alternate five zones of extremely debased false-relief consisting merely of two rows of subtriangular depressions with their apices all upwards. The profile has what seems to be a blurred reminiscence of the broad central groove of south-west Scottish bowls, Childe's Type C.¹ It is from that type that the Knockhills specimen has clearly devolved, and helps to show, indeed, that we may generally for East Scottish food-vessel bowls choose Childe's second alternative and classify as C rather than B. A closely comparable specimen comes from Bo'ness and also serves as a link, while others even more devolved have been found at Pencaitland

8. AXE FROM LOCH KINORD.

The axe illustrated on Pl. LV, 4 was found about a century ago in Loch Kinord, near Dinnet, Aberdeenshire. Mr R. Symmers, 6 King Street, Inverurie, whose grandfather had found it, presented the object to the local museum, under the impression that it was a battle-axe. The writer was doubtful, however, and consulted Dr Douglas Simpson, who recommended that it should be examined by the Keeper of the National Museum of Antiquities in Edinburgh. Examination showed that it was a woodsman's or carpenter's tool of a type used between the thirteenth and sixteenth centuries.

Loch Kinord has yielded from time to time other relics, including canoes, a bronze vessel and a bronze spear-head.

GEORGE S. BEATON, *Librarian*,
The Public Library, Inverurie.

9. A SMALL BRASS IN KIRKCUDBRIGHT MUSEUM.

This small group of 6 boys and 8 girls, engraved on a brass plate 11½ by 5½ inches, was noticed by Mr James S. Richardson, F.S.A.Scot., when visiting the Museum in May 1946. It is in Case E on north side of gallery (fig. 1).



Fig. 1.

The group is typical English work of c. 1530, and formed part of a larger brass which probably consisted of effigies of one or both parents, an inscription (beneath which the children would normally be placed), and one or more shields.

The hair of the boys is cut to shoulder length, and over their doublets they wear long loose-sleeved gowns with plain collar and cuffs; their feet are encased in clumsy broad-toed shoes. The girls are depicted with long hair and pedimental frontlets, and gowns cut square at the neck, with plain turned-back cuffs; round the waist of each is a sash, that of the eldest secured with a cinquefoil clasp, and the others tied, with ends falling down in front.

The metal is very thin, varying from about $\frac{1}{16}$ to $\frac{3}{32}$ of an inch, the surface

worn and somewhat uneven. Despite the shallowness of the engraving, a few of the lines still retain traces of black colouring.

This group appears to have been acquired about 1910. The descriptive label reads:

Monumental Brass.
Locality : Stewartry.
Presented by John Maclellan, Esq., London.

It is not known how it came into the donor's possession.

I cannot but regard the Stewartry attribution with grave suspicion, for I have so far found no evidence of any English brasses having been laid down in Scotland. All despoiled slabs I have seen north of the Border are of Tournai stone, whereas the English brasses were inlaid in slabs of Purbeck or other native marble, and I think there is little doubt that this brass came from some church in England.

F. A. GREENHILL.

10. LONG CIST AT LEUCHARS, FIFE.

During May 1948 the St Andrews University Archæological Society, acting on information received from Mr Forsyth, the local schoolmaster, excavated a cist which lay on the west side of Leuchars school playground. While the playground itself was being constructed in 1908, 34 other such cists were uncovered in

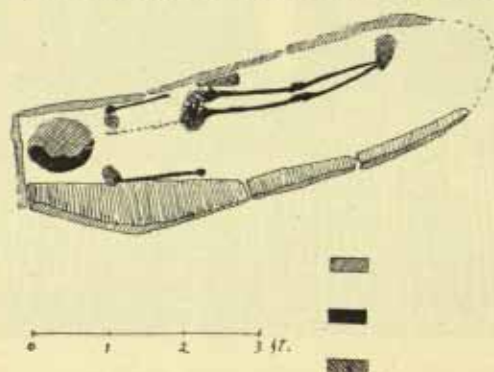


Fig. 2. Long cist at Leuchars, Fife.

the presence of Wm. Reid, who states¹ that they were laid out in long rows, head to feet, and usually consisted of between four and six side-slabs, a slab at the head and another at the feet, and covering slabs. There were no slabs under the skeleton. The long axis of the cists lay approximately east-west, the head being placed at the west end. The cists were about 6 feet long on the average, and most of the enclosed skeletons were of people between 5 feet 3 inches and 5 feet 4½ inches tall.

In the case of the cist excavated by us, the skeleton was found embedded in a matrix of earth which had filtered in, and when this was removed, was found to

¹ Reid, *P.S.A.S.*, 1908.

be lying slightly on its left side, so that the skull faced north. Reid mentions three in which it was turned to the south. The total length of the skeleton as it lay in the grave was 4 feet 9 inches, though the fact that the teeth were ground flat would not seem to indicate that it was the skeleton of a child. The skull had been crushed by the covering slab which had fallen in on it, and some of the rest of the skeleton had crumbled away (fig. 2).

The cist itself consisted of six slabs, three along each side, a slab at the head, and the covering-stones, which had been to some extent damaged by the traffic which had passed over them. There was no end slab at the feet. The whole construction had been canted slightly to the south (down the slope of the hill on which it lies). The fact that the site had been preserved at all is no doubt due to the presence of a layer of earth, about 2 feet thick, which covered it until about 1715.¹

On the site where the school stands to-day there were, up to the sixteenth century, the ruins of the Culdee chapel of St Bonac, which appears to have been in use from the ninth to the twelfth century, when it was replaced by the present church. As this type of burial was used from the fifth century until the Poor Law finally made it necessary for the parish to supply a wooden coffin for the burial of paupers,² and as the east-west orientation indicates Christian burial rites, it seems very probable that the cists are contemporary with the chapel, and that the site would not be used very long after the new church had come into use.

JOHN E. HOOPER,
Traquairbank, Innerleithen.

11. PART OF CROSS-SLAB FROM LEUCHARS, FIFE.

During an excursion organised by the St Andrews University Archaeological Society on 17th April 1948, the site of Leuchars Castle was visited. This site, known as Castle Knowe, is an artificial mound once surrounded by a moat. On it are two parallel rows of yew trees which may at one time have formed an avenue. Of the castle itself there is no trace with the exception of some stones lying at the bases of the tree-trunks.

The cross-slab was found among the stones lying along the eastern row of trees. The front of the slab (Pl. LV, 1) measures 14 inches long by 6½ inches deep at the left, and 8½ inches at the right. Views of the back and edge of the slab are also shown. It is preserved in the historic church of St Athelnasc, Leuchars.

NORMAN JOHNSON, *Hon. Sec.*

12. A BRONZE AGE BURIAL CIST AT BALBIE FARM, BURNTISLAND.

In late November 1948 a ploughman on the property of Mr J. Spence, Balbie Farm, Burntisland, encountered and raised a flat stone slab just beneath the surface of the field, on the eastern side of an artificial-looking knoll some 90 feet across, at about 30 feet from the centre. The site is 350 yards south-west of the farmhouse on the summit of an isolated spur (Tournament Hill), over 550 feet

¹ *Statistical Account for Scotland*, 1795.

² Anderson, *P.S.A.S.*, vol. xviii.

above sea-level between two higher ridges (Nat. Grid ref. 36/228884). The Ordnance Survey 6-inch map marks "site of cairn" in the next field 200 yards to N.N.E., and "stone cist found" on the other side of Basperd Hill, 500 yards southwards. The existence of the slab had been known for some years, and about six years ago a broken portion of one corner had been lifted and shown to cover a cavity, regarded as a "well." The removal of the entire slab in 1948 revealed a short cist containing burials (fig. 3).

As a result of the earlier investigations, a certain amount of earth had fallen into the cist and covered the floor in the northern and eastern corners, but otherwise the cist was empty of soil. The capstone of sandstone¹ was closely covered

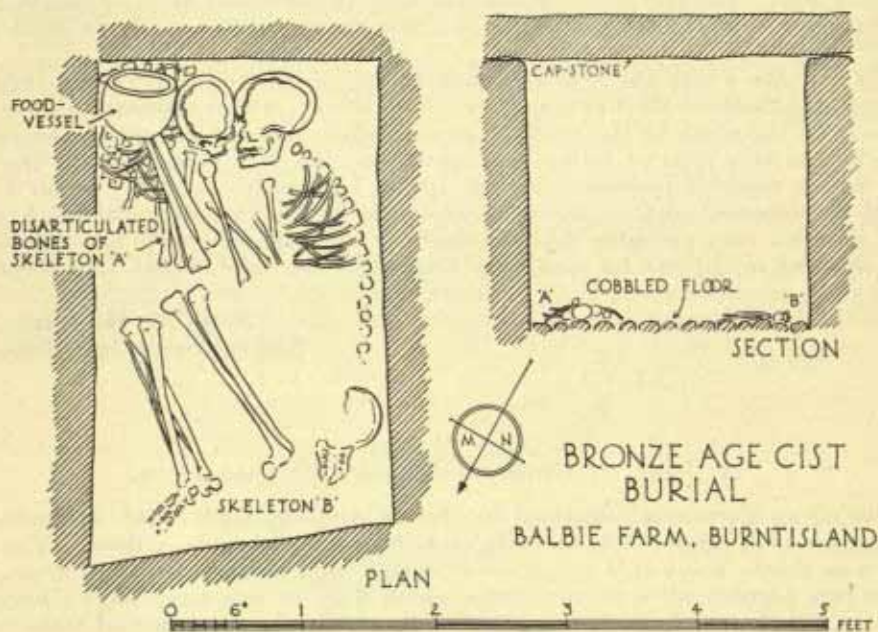


Fig. 3.

with natural cup-marks of various sizes, which had no doubt led to the slab being selected. The sandstone side-slabs were very well fitted at the corners, and the joints here and along the junction with the capstone had been carefully puddled with grey clay. The floor was cobbled with round or oval limestone beach pebbles set in clay: the pebbles were carefully chosen for uniformity of size, averaging about 1 by 2 inches, and presumably had been collected on the shore of the Forth some 1½ miles away.

The burials had been slightly disturbed by the farm workers before the site was examined on 26th November, but the bones covered by earth were unmoved. It was found that the cist contained two skeletons, one articulated and in a crouched position (Skeleton B), and the other obviously removed to make room for this burial, and the disarticulated bones piled in a heap in the eastern corner of

¹ Kindly identified by Mr W. Eckford as Old Red Sandstone, presumably from some miles further north than the volcanic hills on which Balbie lies. The "cup-marks" had originally been filled with marly concretions.

the cist (Skeleton A). On top of this heap of bones was an intact food-vessel, probably originally upright but at the time of discovery leaning over to the south-east.

Although some care had clearly been taken with the redeposition of Skeleton A at the time of the second burial in the cist, certain bones were missing, notably the lower jaw. The skull was resting on its base, and the upper part of the cranial vault had decayed away. Similarly, the skull of Skeleton B, lying on its side, had lost its upper (left) half, and the lower jaw was similarly half eroded away.

The use of a food-vessel cist for more than one burial, with the earlier occupant unceremoniously bundled into a corner, is of some interest. Precisely similar circumstances were observed by Mr R. B. K. Stevenson in a beaker cist at West Pinkerton, near Dunbar,¹ and it seems likely that more careful observation in several more earlier discoveries would have revealed the same state of affairs. It is in accordance with other Early Bronze Age instances of the re-use of an earlier grave recorded from barrow-burials in England, as for instance the A beaker burial inserted into the grave-pit of a B beaker interment at Cassington, Oxon,² or the food-vessel burial similarly inserted in an inhumation grave-pit on Rockbourne Down, Hants.³ In the Yorkshire Wolds, more than one similar double burial has been recorded, involving both beaker and food-vessel interments.⁴ In the Burntisland cist it is impossible to tell which burial was made with the food-vessel, which might have been associated with either Skeleton A or Skeleton B. But a broad date for both burials within the early part of the Middle Bronze Age is certain enough, with a long enough interval between the two funeral ceremonies for the first occupant of the cist to have decayed to a completely skeletal condition before the insertion of the later corpse.

The food-vessel (Pl. LIV, 6) is of very gritty fabric, having a buff surface tinged with grey in parts of the exterior. The dimensions are: height 5·7 inches, rim diameter 5·8 inches, maximum diameter 6·4 inches, diameter of the base, which has disintegrated superficially, 3·4 inches. The vessel has a rounded curvature about 2 inches below the lip, and the upper part of the profile is concave, while the lower is convex. The decoration consists of close-set rows of shallow but carefully executed whipped-cord impressions; these lie radially on the bevelled rim and obliquely on the edge of the lip, and cover horizontally all the exterior of the wall, except for five narrow lines of "false-relief" spaced out three above the curvature and two below it.

The food-vessel has generously been added to the National Collection by Mr John Spence.

The Skeletons.

Professor W. C. Osman Hill, of the University of Edinburgh, has kindly examined the skeletons and reports as follows:—

The remains comprise the skeletons of two adults, a male (B) and a female (A), both dying, as judged by tooth-wear, in early middle life. Both are markedly brachycephalic. The stature of the man was 1760 mm. (5 feet 9 inches) and the female about the same. The male was very robust and with rugged features. Both show marked muscularity of the lower limbs, with deep gluteal fossæ on the ilium, strongly platymeric and pilastered thighs and platynemic tibiæ.

STUART PIGGOTT.

¹ *P.S.A.S.*, vol. lxxiii (1938-39), p. 231, with note on other Scottish examples; see also *P.S.A.S.*, vol. lxxiv., p. 139, and vol. lxxix. p. 174.

² *Ozoniensis*, vol. xi-xii (1946-47), p. 164.

³ *Proc. Hants. Field Club*, vol. xvi. (1946), p. 156.

⁴ *Cf. Arch. Journ.*, vol. xciv. (1938), p. 50, with refs.

13. A CINERARY URN FROM MILNGAVIE, DUNBARTONSHIRE.

In 1946, the cinerary urn illustrated in fig. 4 was brought to the Art Gallery and Museum, Kelvingrove, Glasgow, for repair. The urn, which is of moderately hard, unrefined yellow clay, tinged orange or almost red in places in its upper half, with the outer surface smoothed down, stands $13\frac{1}{4}$ inches high. At the mouth the diameter is $10\frac{1}{4}$ inches; the overhanging rim is decorated with a neat though irregular diamond pattern, obtained by applying a twisted cord in intersecting

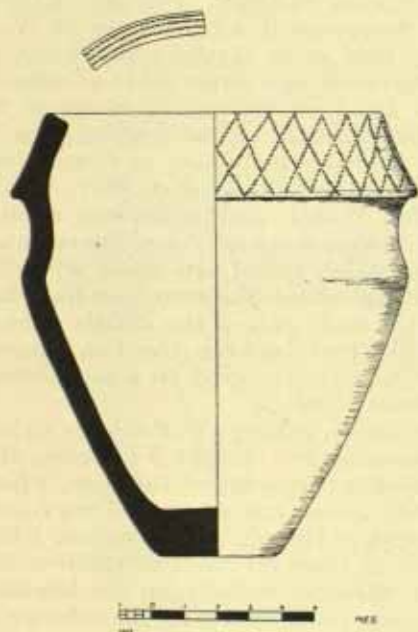


Fig. 4. Cinerary urn from Milngavie.

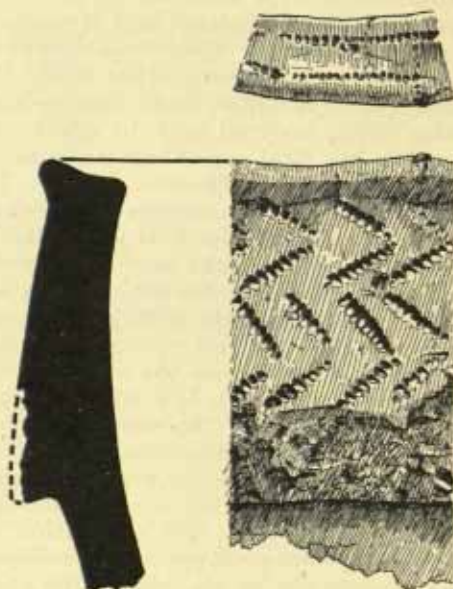


Fig. 5. Rim and section of cinerary urn, Milngavie (1).

lines; the internal bevel is decorated with three concentric rows of applied twisted-cord impressions. Below the rim the neck contracts sharply before swelling out to the shoulder, from which the body falls evenly away in a slightly convex curve to a base $3\frac{1}{2}$ inches in diameter. There are no calcined bones or other relics now associated with the urn.

The urn is the property of the Milngavie Golf Club, and was found, probably in the early years of the present century, at Mount Zion, a knoll just over 400 feet above sea-level, about a mile and a half north-west of Milngavie (Nat. Grid ref. 26/536766). When the summit of this natural eminence was levelled to construct the fourth and eleventh greens of the course, two "ancient vases," of which this urn is one, were discovered, but it is not recorded whether they were originally buried in the natural soil or in an artificial mound; the artificial mound now visible may well be a result of the levelling.

Mr W. Scott Cochran, of the Milngavie Golf Club, has been kind enough to scan the club records for references. There appears to be no mention of the

original discovery, but the following is an excerpt from the Minute of Meeting of Committee of Milngavie Golf Club, held on Saturday, 11th April 1908:—

o "*Ancient Vases*.—A letter was read from W. Watson Murray, Esq., with reference to the condition of the Ancient Vases found on Mount Zion some years ago. Accompanying Mr Murray's letter was one from Mr Ludovic McL. Mann, requesting the loan of one of the Ancient Vases for exhibition purposes, and suggesting that they should be put into a proper state of repair. The secretary was instructed to explain to Mr Murray that in the course of some excavations on Mount Zion some time ago two vases were found. The first was completely shattered by the workmen's picks and, as many parts were missing, the remaining portions were not preserved. The second was taken out with only trifling damage, and was still in the same condition as when taken out of the ground. This vase was placed in a well-made glass case, which was fixed on the wall of one of the rooms of the Club House."

I was struck by the resemblance, as well in appearance as in circumstances of discovery, of the Milngavie urn to that described by Dr J. Graham Callander in the *Proceedings* of 1907-8, vol. xlii. pp. 218-9. Dr Callander says: "In one of the urns discovered in a cairn in the parish of New Kilpatrick, Dunbartonshire, which has not been recorded before, four hollow cylindrical objects of bone and five arrow-heads of flint were found among the burnt human bones contained in the vessel. The urn containing these relics was a large, handsome example of the cinerary type. It had a heavy overhanging rim, with a deep contracted neck between the rim and the body of the vessel, and the latter part contracted to a narrow base, in a fine, regular, convex curve. When discovered, the urn was inverted over a large quantity of burnt bones, which nearly filled the vessel when replaced in it."

Mr Ludovic McL. Mann is of the opinion that the Milngavie Golf Club urn is the same as that described by Dr Callander. Mr Mann was unable to examine the urn at the time of its discovery, as he had to leave Glasgow on business, but he requested Dr Callander to follow up the discovery, as it is clear he did.

The four hollow cylindrical objects of bone and five arrow-heads of flint are now in the National Museum. Mr R. B. K. Stevenson informs me that they were presented by Dr Callander in 1907, along with two pieces of a cinerary urn,¹ which could well be the urn "shattered by the workmen's picks." Moreover, the catalogue entry states that the bone objects, arrow-heads and pieces of pottery were found at Milngavie, and not simply in the parish of New Kilpatrick, as stated in the *Proceedings*.

In the absence of actual eye-witness testimony absolute certainty is impossible, but the balance of probabilities must be held to favour the identification of the urn belonging to the Milngavie Golf Club with that described by Dr Callander in the *Proceedings* of 1907-8.

This note is published with the permission of the Committee of the Milngavie Golf Club, and I am indebted to Mr W. Scott Cochran of that club, as well as to Mr Ludovic McL. Mann and Mr R. B. K. Stevenson, for information and assistance.

J. G. SCOTT.

¹ Mr Stevenson states that the pieces of cinerary urn are a fragment of rim, originally about 11 inches in diameter, decorated with whipped-cord impressions (fig. 5), and most of a base $4\frac{1}{2}$ inches across.

14. NOTES ON UNRECORDED STONES IN THE TAY VALLEY, NEAR ABERFELDY.

I.

On the hill behind the farmhouse and steading of Glassie about a mile, as the crow flies, due north of Aberfeldy and just above the 1000-foot contour there is a stone bearing cup, ring, and other markings of a somewhat unusual character. Though I have lived almost seventy years in the locality I was unaware of its existence until about a year ago when, in the course of a hill ramble, I chanced upon it and, as it does not appear to have been reported in the *Proceedings* of the Society, I feel that the following account may be of interest.

Photograph I (Pl. LVI, 1a) shows the stone as I first saw it—a three-sided pyramid with a small, almost vertical, south-westerly face devoid of markings, a northerly face the markings on which are well brought out by the midday sun, and a south-easterly face on which they show up best in the afternoon light.

On the occasion of subsequent visits in the company of Mrs Alison Young, F.S.A.Scot., and her sister, Miss Richmond, excavation was undertaken and the buried "tail" of the stone exposed. Unlike the previously exposed surfaces the freshly uncovered portion showed little sign of weathering, the cups being in excellent condition and the rock appearing as though recently smoothed and stippled.

At the apex of the pyramid is a group of six cups the largest of which, the largest on the whole stone, measures 4 inches by $4\frac{1}{2}$ inches, and 2 inches deep. Round this group and swinging back and up from their origin at the junction of the northerly and south-westerly faces three concentric arc-shaped channels reach the dorsal ridge of the stone, which the two outer channels cross to pass downwards and forwards on the south-easterly face where, after the middle arc has joined the outer, they fade out before reaching the junction of the south-easterly and south-westerly faces. At the point where these arcs cross the ridge the two faces of the stone enclose an angle of 110° . The other arc, the innermost, is confined to the northerly face.

On the south-easterly face, in addition to the two arcs mentioned, are about a dozen cups, several large but none particularly deep. Excavation failed to add to the number, but we were rewarded by the discovery of what resembles the imprint, apparently artificial in origin, of the fingers and thumb of a gigantic (left) hand measuring 12 inches across (partly shown in Pl. LVI, 1b about halfway along the left side of the stone just below the crack).

Apart from the group of cups at the apex and those on the south-easterly face, two, well marked, were noted at the tail of the spine but on excavation further in this direction a beautiful picture was revealed. Six cups were added to the number already noted, three well marked, two of these particularly so and standing in inverted relief. Three of the six have ring markings (single) and a fourth shows, in addition to a narrow ring, a considerable arc of a second ring with a radius of 6 inches. As already noted this part of the rock has the appearance of having been smoothed and stippled—i.e., prepared.

A very good impression of the whole south-easterly face and flattened-out tail of the stone is obtained from the accompanying excellent sketch by Mrs Young (fig. 6).

On the south-westerly face, as stated, there are no markings. The almost vertical setting of this face gave us the impression that, at some time or another, a piece had been broken away, and a search was made among the one or two stones

lying near by. On one of these, about 14 feet N.-N.W., a small stone roughly 2 feet square and projecting about a foot from the ground, Mrs Young found two shallow cups, one about $1\frac{1}{4}$ inches in diameter and the other smaller and less well defined.

The site, which commands a fairly extensive view of the valley east and west and of the hills beyond, is easily located if one follows the road to Glassie to the point where it ceases to climb and turns at right angles to proceed eastwards along the level, and then, instead of holding to it, continues up the hill by the

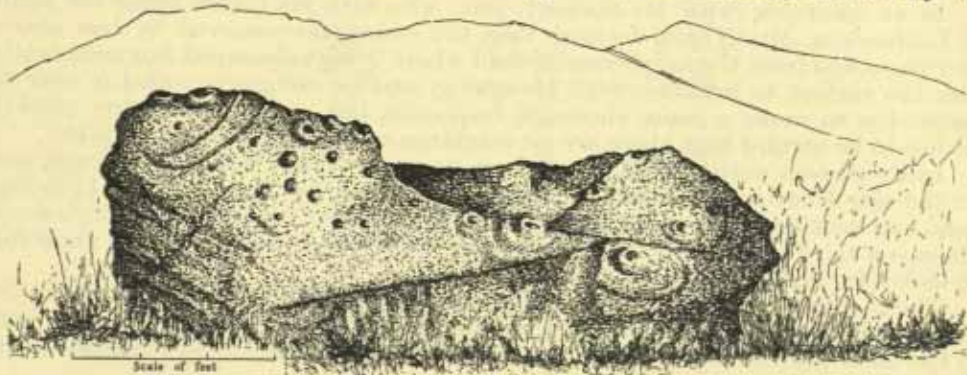


Fig. 6. Sketch of Glassie stone, near Aberfeldy.

wall at this part for about 300 paces to the first gate beyond. From this gate a line (compass bearing 55° east of north) to the N.W. angle of a small plantation above Glassie cuts right through the stone. From the gate to the stone is about 480 paces. From the stone Glassie (Normal National Grid No. 27/856509) lies distant about $\frac{1}{4}$ mile to the S.E.

From Aberfeldy Glassie can be seen immediately below the skyline, due north, and from the higher parts of the town the site of the stone is just visible.

Mrs Young agreed with me that the stone is part of the living rock of the hill—*i.e.*, not a boulder. A chip was submitted to Dr K. C. Dunham, Geological Survey and Museum, South Kensington, London, who reported it to be "a coarse, somewhat schistose epidiorite composed of oligoclase, augite, chlorite, biotite and magnetite."

Apart from the fact that the markings occur on both sides of it the features which would appear to be of peculiar interest in connection with this stone are:—

- 1st. The arc-like channels which commence on the northerly face are carried over the ridge at an angle of 110° and are continued downwards on the south-easterly face.
- 2nd. A number of the cups are truly "cups" as distinct from the usual saucer-like "depressions" and stand above the surrounding surface of the rock with definite, though thick, "rims."
- 3rd. The odd "finger-and-thumb" markings low down on the south-easterly face.

About 80 yards east of the cup- and ring-marked stone there is another stone, rather more conspicuous and of the same pyramidal shape and with the same compass orientation, but it shows no markings.

II.

This stone, like the foregoing, has not so far as I am aware been recorded. It is a large granite boulder, somewhat pillow-shaped in form, occupying a site a few yards off and to the west of the road up from the main Aberfeldy-Grantully road to the farm steading of Laidnaskea (Aberfeldy $3\frac{1}{2}$ miles), and my attention was drawn to it by Mrs Young, who discovered it when on a visit to the Laidnaskea stone described by Dr Hugh Macmillan (*Proc. Soc. Ant. Scot.*, vol. 1883-4, p. 120).

In an interview with Mr Stewart, jun., who with his father farms the lands of Laidnaskea, Mrs Young learned that the stone was removed by him about two years ago from the neighbouring field where it lay submerged but sufficiently near the surface to interfere with ploughing, and he obligingly rolled it over to enable her to make a more thorough inspection but unfortunately too quickly for her to be certain that there are no markings on the side now undermost.

In its present position the stone shows two very large well-marked cups, one on the side fronting south which measures $5\frac{1}{2}$ inches by $3\frac{1}{2}$ inches and $1\frac{1}{2}$ inches deep, and another on the side fronting north $4\frac{1}{2}$ inches by $2\frac{1}{2}$ inches and $\frac{3}{4}$ inch deep. There is a third cup, also on the north face, shallow and perhaps a little doubtful, $3\frac{1}{2}$ inches by $1\frac{1}{2}$ inches.

These cups struck me as having less appearance of "age" than is shown by the cups on the other cup-marked stones in the district. This may be due in part to the facts that the stone is of granite and that it has not been exposed to the effects of weathering.

The over-all measurements of the boulder are: girth round the middle, about $6\frac{1}{2}$ feet; girth round the ends, 10 or $10\frac{1}{2}$ feet; weight (as estimated by Mr Stewart), about 30 cwt.

The site from which Mr Stewart removed the stone is about 100 yards to the south-west (so far as he can remember), but there is nothing distinctive about it to mark it out from the surface of the ground round about.

N. D. MACKAY.

15. A LATE BRONZE AGE BURIAL FROM ORROCK, NEAR BURNTISLAND.

The purpose of this note is to draw attention to a Late Bronze Age burial discovered and published in the early eighteenth century, and which has since been overlooked.

The discovery of a collection of bronze objects in a cairn, and thus evidently associated with a burial, was published as early as 1710 by Sir Robert Sibbald in a book entitled *Miscellanea Quaedam Eruditae Antiquitatis quae ad Borealem Britanniae majoris Partem pertinent*.

The cairn was in a field at Orrock, on the hills a mile or so to the north of Burntisland, and where a farm of that name still exists to-day. No report was made of any burial having been found, and it is therefore probable that this was originally an inhumation rather than a cremation. All trace of unburnt bones would be likely to vanish in an acid soil.

The find is carefully described by Sibbald, who illustrates the more important objects in an engraved plate (Tab. I) at approximately their full size (as can be deduced from comparison with the measurements given by Sibbald in the text). The following types were included:

Sunflower pin of bronze with swan's neck. This was called a stylus by Sibbald, after whose careful engraving the figure is redrawn (fig. 7, no. 1).

• Amber bead, spherical and broken in half. "*Ex hoc etiam lapidum acervo erutus fuit ex succino globulus in medio perforatus, et in partes duas aequales fractus.*"

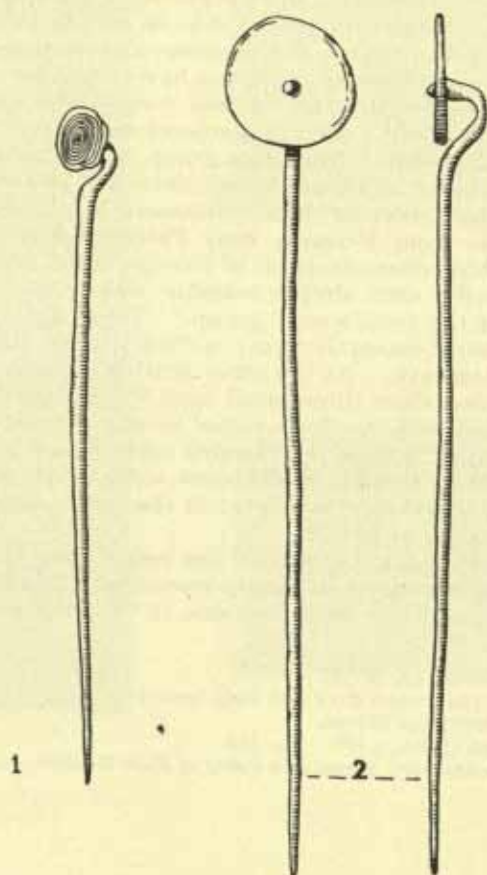


Fig. 1. (1) Bronze pin from Orrock find (after Sibbald); (2) Bronze pin from Tarves, Aberdeenshire (†).

If the illustration is full size the bead should measure just under 2 cm. in diameter, and with a perforation $\frac{1}{2}$ cm. across.

Three penannular bronze armlets, almost similar, and all missing one terminal. The illustrated example shows that the terminals were thickened, and can therefore be compared with the armlets from the Beachy Head hoard, illustrated in the *British Museum Bronze Age Guide*, pl. iv. From Sibbald's illustration these armlets may have been about 5.5 cm. in external diameter.

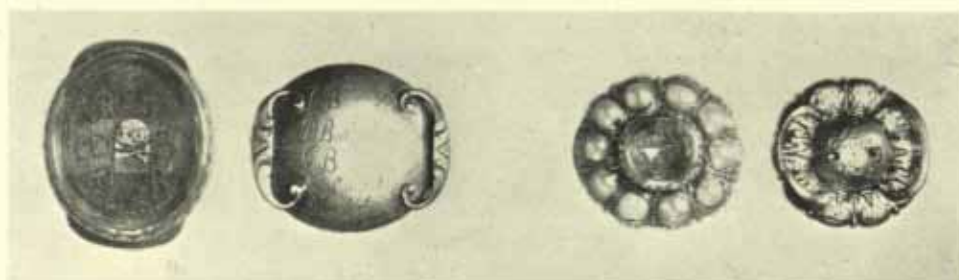
Shale armlet (?) in two fragments, not illustrated. Described as "*ex gummatibus quibusdam odoriferis artificiose compositi.*" It was evidently originally a complete circle, and was compared by Sibbald to an example then in the



1. Painted panel from Lincluden:
(a) as found; (b) restored.



2. The Lincluden misericords.



3. Eighteenth century Neckslides ({}).



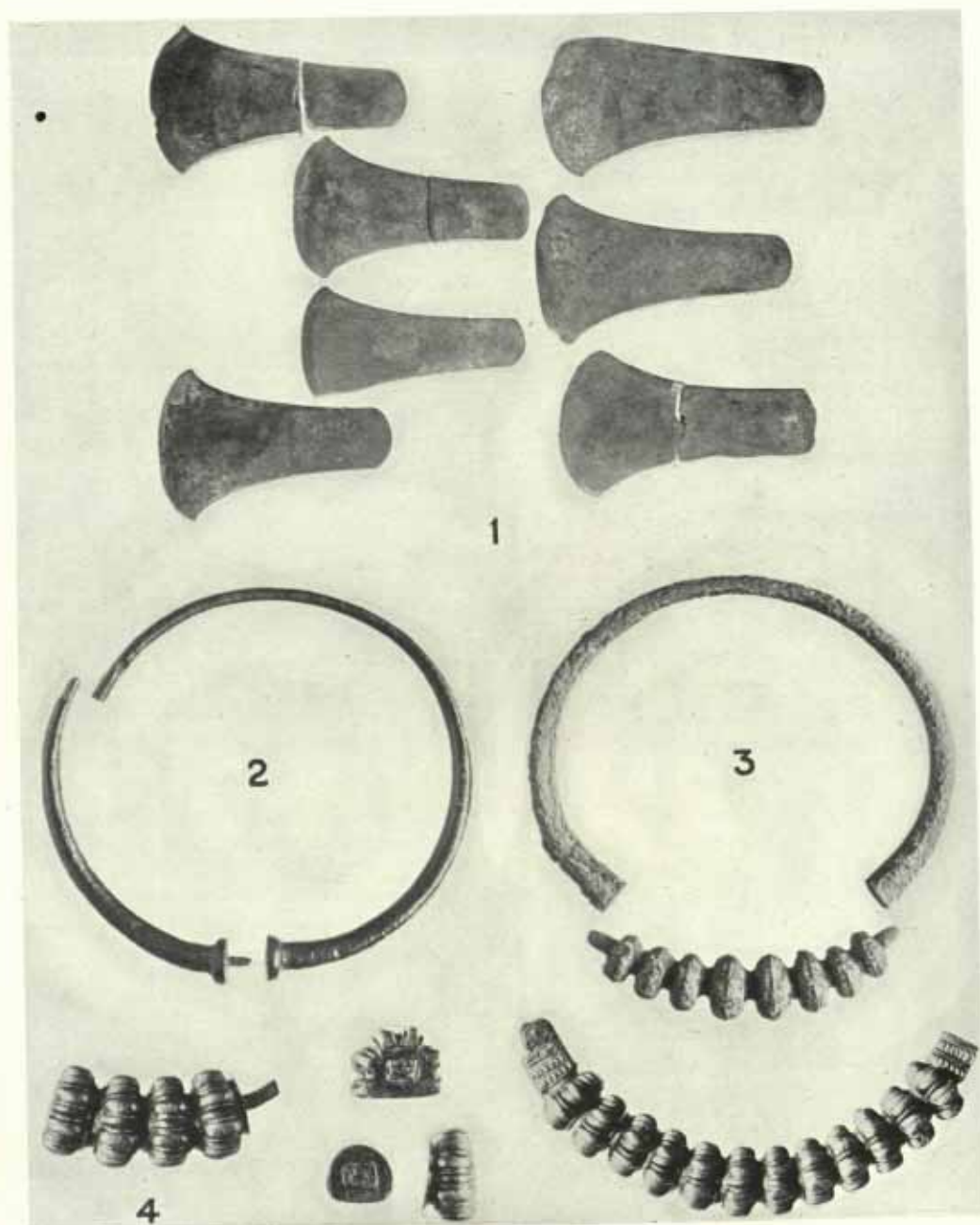
1. Carved oak panels, formerly at Greenlaw,
Kirkeudbrightshire.



2. Side view.



3. Greenlaw panels: detail of figures.



1. Hoard of flat bronze axes from Rhynie parish, Aberdeenshire (under §).
2. Torc from Kelton, Dumfriesshire (*c.* §).
3. Beaded torc from Lamberton Moor (under §).
4. Hyndford torc (*c.* §) and details.



1. Gold armlet from Kirkmaiden ($\frac{1}{4}$).



2. Neolithic pot from Roslin, Midlothian (c. $\frac{1}{2}$).



3. Beaker from Fettercairn ($\frac{1}{4}$).



4. Food-vessel from Knockhill, Kirkden, Angus ($\frac{1}{4}$).



5. Cist at Knockhill, Kirkden, Angus (food-vessel replaced).



6. Food-vessel from Balbie Farm, Burntisland ($\frac{1}{4}$).



2. Leuchars slab: reverse (1).



4. Axe from Loch Kinord, Aberdeenshire (1).



1. Cross-slab from Leuchars, Fife: obverse (1).



3. Leuchars slab: edge (1).



(a)

(b)

1. Cup-marked stone at Glassie, near Aberfeldy: (a) northerly face; (b) south-easterly face.



2. Shoemaker's measuring rod, 1788 ($\frac{1}{2}$).



3. Gold-mounted tortoise-shell snuff-box with miniature of Prince Charles Edward Stuart ($\frac{1}{2}$).

PROCEEDINGS
OF THE
SOCIETY OF ANTIQUARIES OF SCOTLAND

ONE HUNDRED AND SIXTY-EIGHTH SESSION, 1947-1948

ANNIVERSARY MEETING, 30th November 1948.

THE RIGHT HON. THE EARL OF HADDINGTON, M.C., T.D.,
F.S.A.Scot., President, in the Chair.

Mr A. R. Cross and Dr K. A. Steer were appointed Scrutineers of the Ballot for Office-Bearers.

The Ballot having been concluded, the Scrutineers found and declared the List of the Council for the ensuing year to be as follows:—

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Sir DAVID RUSSELL, LL.D.
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Librarian.

H. J. H. DRUMMOND, M.A.

A Ballot having been taken, the following were elected Fellows: Professor Arthur Adams; Rev. James Anderson, M.A., B.D.; R. J. C. Atkinson; George Stuart Beaton; George Bruce; William Bryce, J.P.; Miss K. M. Dickie; Mrs Marion Gay Duffy; R. W. Feachem; William Spence Forsyth; Andrew M. Fotheringham, J.P.; Alexander M. Gillespie, O.B.E., M.D., F.R.C.P.E.; Rev. William H. Goodall; John R. C. Hamilton, M.A.; Charles Stewart Hunter, M.D., D.P.H., F.R.S.E.; Rev. P. H. R. Mackay; Rev. William B. Maclaren, M.A.; Archibald John MacLean; A. Hugh Mottram, F.R.I.B.A., F.R.I.A.S.; Frederick R. S. Rogers, M.R.S.T., F.Ph.S.(Eng.); Rev. J. W. Royan, B. es L., L.Th.; Ronald M. Smith; Rev. David M. G. Stalker, M.A., B.D.; Edmund John Sulley; Philip Thorburn, B.A.(Cantab.), M.R.A.S.; Alfred Edgar Truckell; Frederick T. Wainwright, B.A., Ph.D., F.S.A.; Miss Elspeth J. Boog Watson, M.A.; Douglas Whitton; Frederic Victor Wright.

The Secretary read the following List of Members deceased since the last Anniversary Meeting: *Fellows*—George F. Black, Ph.D.; Sir Gilbert Archer; Tancred Borenius, D.Lit., Ph.D., F.S.A.; Donald Brown; William Fordyce Clark; Douglas H. Cox; Major William Howie Doig, C.E.; Mrs L. Duff-Dunbar of Ackergill; James Duncan; H. Ferguson-Watson, M.D., Ph.D., D.P.H., F.R.S.E., F.R.F.P.S.; Sir John Fraser, K.C.V.O., M.C., M.D., F.R.C.S.E., LL.D.; J. T. Gibb; Rev. Alexander Halliday; William Barr Knox; James McCosh; Rev. R. MacCowan; Henry Lachlan Macdonald; R. McErlich; Rev. Archibald MacFadyen; D. P. MacLagan, W.S.; Dugald Maclean, M.A., LL.B.; James Paton; Rev. Francis W. Peverelle; The Hon. Lord St Vigeans, LL.D.; T. J. Sampson, J.P., M.I.Q.; Mackenzie S. Shaw, W.S.; Colonel Charles Louis Spencer, C.B.E., D.S.O.; Edward F. Sykes; James Cornwallis Thomson, C.A.; William J. Watson, M.A., LL.D., D.Litt.Celt., F.R.S.E.; H. Mallam Williams, J.P.; Frederick Wishart.

The Chairman paid a tribute to the late Mr MacLagan, who had been one of the Honorary Secretaries of the Society for twenty-five years.

The Secretary read the following Report by the Council on the affairs of the Society:—

ANNUAL REPORT.

The Council herewith submits to the Fellows of the Society its Report for the year ending 30th November 1948.

<i>Fellowship.</i> —The total number of Fellows on the roll at	
30th November 1947 was	867
At 30th November 1948 the number was	852
being a decrease of	15

The number of new Fellows added to the roll during the year was 43, while 32 died, 19 resigned, and 5 allowed their membership to lapse. There are 12 Honorary Fellows, 7 Corresponding Members, and 1 Lady Associate. The number of libraries which subscribe to the Society's *Proceedings* is 46, and there are 171 Societies and Institutions, British, Colonial and foreign, on an exchange basis.

Proceedings.—Volumes LXXX and LXXXI relative to the years 1945–46 and 1946–47 are in an advanced state of preparation and should be in the hands of Fellows by the end of this year or very early in 1949. As agreed by the Council, these two volumes will be bound as one in the usual cloth cover. Subsequent volumes or parts will be issued in paper covers,¹ by which means it is hoped that a regular yearly issue may be maintained and certain economies effected.

The Museum.

Staff.—After twenty-six years' service in the Museum, Mr William Darroch retired in November 1948 from the post of Technical Assistant. The Society has been much indebted to his work, particularly for illustrations for the *Proceedings*.

The Treasury has agreed to the temporary appointment of an Assistant Librarian to catalogue and rearrange the Library over a period of three years, and Mrs N. H. Campbell commenced in October.

Accessions.—Though the number of items received by donation or bequest was relatively low (269), the standard of size and interest was high and the number of sources (56) unusually large.

The Trustees of the Marquess of Lothian have generously presented the varied collection of local antiquities from prehistoric to modern times long preserved at Monteviot, which includes many of the finds made at the Roman Camp at Cappuck during the excava-

¹ Meanwhile overruled in favour of half-cloth binding.

tions of 1885 and 1911-12; the whole will be known as the Monteviot Collection. Among other material of prehistoric date must be mentioned part of a Hallstatt bowl and a cord-ornamented beaker from Sundayswells, Aberdeenshire, given by Sir Thomas Innes of Learney, K.C.V.O., F.S.A.Scot.; a clay tuyère or nozzle for conveying a draught to a prehistoric furnace, from the late T. McLaren, F.S.A.Scot.; a steatite urn of peculiar shape found in Whalsay given by Mrs Georgina Paton through John Stewart, F.S.A.Scot.; a rare stone macehead, a flat bronze axe and a Roman axe, the latter from Ardoch, given by Miss M. R. MacOwan; and seven flat bronze axes from a hoard in the parish of Rhynie, Aberdeenshire, presented by H.M. Forestry Commission. Two food-vessels and various small objects from burials at Patrickholm, Larkhall, were presented by Mr McNeill Hamilton through Mr J. Harrison Maxwell, F.S.A.Scot. Through the King's and Lord Treasurer's Remembrancer a fine and rare gold coin of Trajan has been transmitted from recent excavations at Newstead.

Dr J. J. Galbraith, F.S.A.Scot., has placed us under further obligation by presenting the two crystal silver-mounted charm-stones of the MacKenzies of Ardoch, long on loan in the Museum. A very fine example of a "lectern" sundial, originally at Wright's Houses, Edinburgh, has been given by the War Office. The late Sir Theophilus Biddulph bequeathed a tortoise-shell snuff-box with on its lid a miniature of Prince Charles Edward, believed to have been painted in 1776. Additions to the growing costume collection have been made by the late Miss Florence Urquhart and by Miss E. B. Henderson, F.S.A.Scot., the latter also generously gifting some jewellery, including a mourning neckslide dated 1703. Among other numerous items of these later periods must be noted a set of bookbinders' finishing tools presented by Messrs Henderson and Bisset, and insignia worn by Robert Bald the geologist, given by Brigadier R. Leslie.

The outstanding accessions of the year were, however, acquired by purchase. As Fellows already know, the gold oil vial used at the Scottish Coronation of Charles I was bought from the Trustees of the late Sir George Suttie with the help of the National Art Collections Fund. A further rare purchase is a bookcase made up by the nineteenth-century antiquary Joseph Train out of carved oak believed to have been from a bed; the carving includes 23 little figures besides interlaced patterns, and may be dated about 1600. Other purchases, 88 in all, include a large gesso panel painted with a naval scene of the time of Queen Anne and formerly in Inchbraock House, Montrose; a seventeenth-century sword with "mortuary"

hilt: rare medals (5), coins (2) and tokens (37); and various pre-historic objects from Joseph Train's collection.

Exhibition.—The red-brick walls of the ground-floor gallery have been painted cream and the exhibits there completely rearranged.

Excavations.—During the course of the year various excavations have been undertaken on behalf of the Society. Dr A. O. Curle continued work on the "wag" at Forse, Caithness; Professor Piggott continued his work on Cairnpapple Hill, near Torphichen; and a grant was made to the Scottish Field School of Archæology towards the expenses of persons other than University students whose services might be obtained for excavation on three sites. These three sites were: Hownam Rings Hill Fort, Morebattle, Roxburghshire; the Roman site at Milton, Beattock, Dumfriesshire; and the above operations at Cairnpapple Hill.

Rhind Lectureship.—The Rhind Lectures for 1948 were delivered in October by Professor W. M. Calder, LL.D., Professor of Greek in Edinburgh University, his subject being "Early Christian Monuments in the Near East." It is anticipated that the series of lectures prepared by James S. Richardson, LL.D., late Inspector of Ancient Monuments for Scotland, and which have suffered unavoidable delay, may be delivered towards the end of February 1949.

Gunning Fellowship.—The Fellowship for 1948 was awarded to Mr Stuart Maxwell, Assistant Keeper of the Museum.

Chalmers-Jervise Prize.—This prize was not advertised for 1948, although some publicity was given to it in an address by Mr J. M. Davidson to the Ayrshire Archæological and Natural History Society. It is intended, however, that an advertisement should appear in March 1949 in some of the Ayrshire papers.

Special Fund.—Attention is again called to the existence of a Special Purchase Fund inaugurated in March 1948 for the purpose of acquiring objects of national importance which may come up for sale at short notice and which the ordinary funds of the Society are unable to meet. The amount subscribed up to date is £1803. The appeal is a continuing one, and donations large or small are cordially invited from Fellows and all other interested friends.

Deeds of Covenant.—The Treasurer intimates that the response to this scheme has been encouraging. There is room, however, for further expansion, and Fellows are urged to take advantage of this method of supplementing the finances of the Society at no extra cost to themselves. The Form of Deed can be had free of charge on application to the Treasurer of the Society, 42 Melville Street, Edinburgh.

This Report was unanimously approved on the motion of the Chairman, seconded by Dr E. W. M. Balfour-Melville.

At the invitation of the Chair, Mr James J. Lamb, Treasurer, read a Financial Statement for 1946-47 and 1947-48 and commented on certain items. The Accounts were unanimously approved on the motion of Lieut.-Colonel R. L. Hunter, seconded by Professor S. Piggott. A hearty vote of thanks was accorded to the Treasurer by Dr James S. Richardson.

In conclusion, the meeting, on the motion of Dr James S. Richardson, expressed its appreciation of the work done by Mr Stevenson in reorganising the exhibition of objects in the Museum.

After the conclusion of the business meeting, a film lent by the Wellcome Research Institution, London, showing the manufacture of Stone Age Tools, was exhibited, Professor Piggott making some explanatory remarks by way of introduction.

MEETINGS OF THE SOCIETY.

Monday, 12th January 1948, WILLIAM ANGUS, LL.D., in the Chair.

A Ballot having been taken, the following were elected Fellows: Albert Henry Frederick Baldwin; Robert H. Cullen; Thomas Strachan Leighton; Mrs Margaret Mackintosh of Mackintosh; Stuart Maxwell, M.A.; William C. Phillip, M.A.; Miss Julia L. Pringle, M.B., Ch.B.(Edin.); Surgeon-Lieutenant John Brodie Gurney Smith, L.M.S.S.A.(Lond.), F.Ph.S.(Eng.).

The following Communications were read:—

I. Notes on Scottish Incised Slabs (III), by F. A. GREENHILL, M.A., F.S.A.Scot.

II. Drochil Castle and the Plan *Tout une masse*, by W. DOUGLAS SIMPSON, M.A., D.Litt., F.S.A., F.S.A.Scot.

Monday, 9th February 1948, J. M. DAVIDSON, O.B.E., F.C.I.S., F.S.A., in the Chair.

A Ballot having been taken, the following were elected Fellows: Charles Carter, M.Sc.; Rev. Ivo Macnaughton Clark, B.D., Ph.D.; Alexander Lamb; Rev. David M'Roberts; Alexander Maitland, K.C., D.L.; Ian Charles Rutherford, W.S.; David Boath Thoms, M.A.

The following Communications were read:—

I. A Horizontal Mill at Dounby, Orkney, by STEWART H. CRUDEN, A.R.I.B.A., F.S.A.Scot.

II. Excavations at Cairnpapple Hill, Torphichen, by Professor STUART PIGGOTT, B.Litt., F.S.A.Scot.

Monday, 8th March 1948, A. O. CURLE, C.V.O., LL.D., F.S.A., in the Chair.

A Ballot having been taken, the following were elected Fellows: Captain Sir Hugh C. R. Rankin, Bart.; Lady Rankin; Rev. John M'Callum Young, M.A.(Hons.), B.D.

DONATIONS TO AND PURCHASES FOR THE MUSEUM. 315

The following Communications were read:—

I. The Broch of Kilmster, Caithness, by CHARLES S. T. CALDER, A.R.I.A.S., F.S.A.Scot.

II. Excavation of a Hut at Braidwood Fort, Midlothian, by ROBERT B. K. STEVENSON, M.A., F.S.A.Scot.

Monday, 12th April 1948, A. O. CURLE, C.V.O., LL.D., F.S.A., in the Chair.

A Ballot having been taken, the following were elected Fellows: Rev. George B. Burnet, M.A., Ph.D.; Roland Edgar Cooper, F.R.S.E.; John Bell Deans; The Right Hon. The Earl of Rosslyn; Ian H. M'K. Robertson, M.A.

The following Communications were read:—

I. Excavations at Inveresk, by IAN A. RICHMOND, M.A., LL.D., F.B.A., V.-P.S.A., F.S.A.Scot.

II. Excavations at Newstead, by IAN A. RICHMOND, M.A., LL.D., F.B.A., V.-P.S.A., F.S.A.Scot.

Monday, 10th May 1948, J. M. DAVIDSON, O.B.E., F.C.I.S., F.S.A., in the Chair.

A Ballot having been taken, the following were elected Fellows: Richard M. D. Grange; Reginald Saint, F.R.S.A.; Major James Bridges Simpson, M.C.

The following Communications were read:—

I. Some Antiquities in the Parish of Craignish, Argyll, by ANGUS GRAHAM, M.A., F.S.A., F.S.A.Scot.

II. (a) A Stone Age Site at Woodend Loch, near Coatbridge;

(b) A Mote in Glen Devon, Perthshire, by J. M. DAVIDSON, O.B.E., F.C.I.S., F.S.A., F.S.A.Scot.

DONATIONS TO AND PURCHASES FOR THE MUSEUM,
1947-48.

Donations.

(1) Neolithic vessel of rough grey fabric, height 3.8 inches, rim diameter 5 inches, found loose in the sand at Oatslie Sandpit, Roslin. Presented by GEORGE ROMANES, 3 Barnton Avenue, Edinburgh. (See Notes, p. 294.)

(2) Narrow flanged axe of bronze, length 5.8 inches, from Timpendean Farm (cf. *P.S.A.S.*, vol. xxxviii. p. 333); stone axe from Westerhouses (*op. cit.*, p. 328, No. 7); another, from Edgerston Tofts (do., No. 8); another, from Hardenpeel (do., No. 9); two from Oxnam (do., Nos. 10 and 11); two axes of grey and grey-green stone, no locality; beaker from Mack's Mill, Berwickshire (*P.S.A.S.*, vol. xx. p. 100); encrusted urn, restored, from Dunion Hill, Bedrule (*P.S.A.S.*, vol. xx. p. 98); and fragments of an urn of red friable fabric, diameter 12 inches, from Ancrum Moor; heavy perforated axe-hammer of dark igneous rock, length 9.65 inches, from Nisbet Mill Moor, Crailing; plano-convex perforated implement of diorite, found between

Ormiston and Roxburgh (*P.S.A.S.*, vol. xxxviii. p. 331, No. 12); perforated sandstone pebble, 4.6 inches long, from Bonjedward Moor, Jedburgh; pillow-shaped hammer-stone of sandstone, 4 inches long, from Oxnam; rounded pebble with hollowed faces, found in the Jed near Allars Mill; arrow-head of yellow-grey flint, from Cowbog, near Mosshill; and a pyramidal core of yellow-brown flint 2.6 inches long, found in the Rockery, Jedburgh Abbey.

Relics from the Roman Fort of Cappuck, Oxnam, excavated in 1886 and 1911-12, including a fragment of a sculptured slab (*P.S.A.S.*, vol. xlv. p. 477, fig. 12); a bronze armlet (do., fig. 11, 5); other bronze objects, pottery, coins, etc.

A turner or bodle of Charles I; a plack of Mary, dated 1557; steel spear-head 21.2 inches long; wool combs with iron teeth and wooden handles; necklace of carved plum (?) stones, made by French prisoners in Jedburgh Castle jail during Napoleonic Wars; two iron heads of salmon spears, lengths 1 foot 5.2 inches and 1 foot 3.3 inches, with seven and five prongs respectively, probably from Tweeddale; baking-stone of red sandstone, diameter 10.2 inches, 1.5 inch thick; wooden police baton, George III, Roxburghshire, 2 feet 6.2 inches long; square iron padlock, from the site of the old Castle of Jedburgh; 7 iron keys from Jedburgh Abbey, and a steel key having a lozenge-shaped bow, said to be from the Kirk of Jedburgh; pair of double-barrelled French pistols, with flint locks and carved walnut stocks; iron helmet of cabasset type from the Ale Water; iron helmet, oval with triangular peak, found near Cessford Castle before 1851; hodometer, diameter 31 inches; hunting cross-bow of steel with wooden butt; brass object, pointed oval in cross-section, 1.35 inch long, with ring for suspension; piece of wood, perhaps from an ancient bow; iron axe-head. Presented by the TRUSTEES of the MARQUESS of LOTHIAN, to be known as the "Monteviot Collection."

(3) Stone axe with a much weathered grey surface, length 11 inches, found in Mountcastle Crescent, Craigentenny, Edinburgh. Presented by JAMES C. STEWART, 44 Mountcastle Crescent, Edinburgh 8.

(4) Stone axe, 6.15 inches long, found at Kindrochit, Lochtayside. Presented by Dr N. D. MACKAY, F.S.A.Scot.

(5) Stone axe, length 4.9 inches, oval cross-section, highly polished only at cutting edge, tapering to flattened butt; shrunken remains of a roughly square stick 3 feet 9 inches long, with two holes and a slot through it, widely spaced, from near the base of the peat. Found near the main circle at Callanish. Presented by the finder, WM. MORRISON, 27 Callanish, Isle of Lewis.

(6) Flint cores and flakes, two worked scrapers, a flint pebble and a hammer-stone, from Glenluce Sands. Presented by C. E. HARTLEY, 6 Margaret Road, Harrogate.

(7) Seven bronze flat axes, from a quarry at Burnside, Ealaiche Burn, Clashnadarrach, Rhynie, Aberdeenshire. Presented by H.M. FORESTRY COMMISSION (see Notes, p. 292.)

(8) Bronze flat axe, length 5.7 inches; stone macehead of "cushion type"; iron hatchet with long narrow, somewhat drooping, outline and rectangular hammer butt, length 9 inches, believed to have come from the Roman fort at Ardoch, and similar to one found in the excavations at Carzield, Dumfriesshire. Formerly in the possession of the donor's grandfather, Mr Bayne, builder in the Braco area. Presented by Miss MARGARET R. MACOWAN, West View, Braeport, Dunblane, through W. Dickson, W.S., 83 Queensferry Road, Edinburgh.

(9) Half a beaker of coarse fabric, found in the grounds of Fettercairn House, Kincardineshire (see Notes, p. 295); copper halfpenny token from Montrose. Presented by Mrs J. T. EWEN, Pitscandly, Forfar.

(10) Brick-coloured beaker, one-third of a bowl of hard hand-made pottery, and fragments of a cinerary urn preserved inside the beaker, all from Sundayswells Hill, Aberdeenshire. Presented by Sir THOMAS INNES OF LEARNEY, K.C.V.O., F.S.A.Scot., Lord Lyon King of Arms. (See *Proceedings*, vol. lxxx. pp. 148-50.)

(11) Relics from burials at Patrickholm Sandpit, Larkhall, Lanarkshire, including two food-vessels. Presented by Mr MCNEILL HAMILTON, through J. Harrison Maxwell, M.A., F.S.A.Scot.

(12) Food-vessel, found in a short cist at Knockhills, Kirkden, Angus. Presented by Captain BRUCE GARDYNE, Middleton, Angus, through F. A. Ferguson, F.S.A.Scot. (See Notes, p. 295.)

(13) Clay tuyère; lower portion of a small hand-made reddish clay vessel, and a calcined flint scraper, found on the shoulder of Law Hill, Arnbathie, Perthshire. Presented by the late T. McLAREN, F.S.A.Scot. (See next vol. of *Proceedings*.)

(14) Two pieces of the blade of a bronze leaf-shaped sword, broken off below the hilt, the point missing, total length 11 inches. Found in 1947 by a shepherd beside a sheep track at Ardintoul, near the south shore of Loch Alsh, Ross-shire. Presented by Wing-Commander G. L. HUNTING, Slaley Hall, Slaley, Hexham, Northumberland.

(15) Relics from the Broch of Kilmster, Caithness; sherds of hand-made pottery, a steatite whorl, and a rude stone implement, all from sites in Orkney. Presented by the finder, C. S. T. CALDER, A.R.I.A.S., F.S.A.Scot. (See above, p. 138.)

(16) Perforated stone and chert flake, from further excavations at Braidwood Fort. Presented by I. G. H. WARDEN, South Slipperfield, West Linton.

(17) Ball of igneous rock, diameter 2.5 inches, found at Blackchester Fort, Oxtou; and fragment of a clay mould for casting a large curved object,

found at the "Little Fort," Dunagoil, Bute. Presented by Mrs C. M. PIGGOTT, F.S.A.Scot.

(18) Smooth ball of stone, diameter 1.8 inch, found on the donor's farth. Presented by Mr FORTUNE, Three Burn Ford, Channelkirk.

(19) Fragments of wattle and daub and burnt portions of ox and sheep bones, from Blackford Hill Fort, Edinburgh; and sherds of undecorated hand-made pottery, found at Green Castle, Garvald, East Lothian. Presented by R. B. K. STEVENSON, M.A., F.S.A.Scot.

(20) Six sherds of hand-made pottery, and a broken bone bodkin, from the dunes near Loch Hallan, Daliburgh, South Uist; narrow bone point, found in a midden between Loch Borenish and the shore, South Uist. Presented by LESLIE ALCOCK, Brasenose College, Oxford.

(21) Small quartz pebble, with a very smooth flat face, found in the donor's garden at Peebles. Presented by JOHN R. FORTUNE, Corresponding Member.

(22) Steatite vessel (broken) shaped like a bean: oval mouth 5.5 inches by 4.5 inches externally, height 8.5 inches, base convex though flattened. Found in a peat bank at Setter Hill, Marrister, Whalsay. Presented by Mrs GEORGINA PATON, Marrister, Whalsay, through John Stewart, F.S.A.Scot.

(23) Small stone cup or lamp, the hollow being conical and the handle cylindrical, found at Bellvanrock Quarry, Broxburn, by the finder. Presented by R. REID, Main Street, Ratho.

(24) Whetstone of brown quartzite, length 3.18 inches, found near Lub an Eorna, Glenshiel, Ross-shire. Presented by MURDO MACRAE, Lub an Eorna, through the Rev. Mr Macaulay, Kintail.

(25) Polished stone knife of pointed oval shape, length 6.2 inches; decorated steatite spindle-whorl; pendant formed from a small oval pebble; bun-shaped object of steatite, like the upper part of a tiny quern, diameter 3.9 inches, height 1.8 inch; small wooden peg from a peat bog. All found at Snarravoe. Presented by WM. SUTHERLAND, Snarravoe, Uyeasound, Shetland.

(26) Fragment of a beehive-shaped quernstone of granitic rock, from a settlement site at Blakebillend, near Shankland, Cavers, Roxburghshire. Presented by R. W. FEACHEM, F.S.A.Scot.

(27) Half a beehive-shaped quernstone of granitic rock, and a fragment of an upper quernstone of red conglomerate, from a settlement site on Tamshiel Rig, near Carter Bar, Roxburghshire. Presented by K. A. STEER, M.A., Ph.D., F.S.A., F.S.A.Scot.

(28) Aureus of Trajan from excavations at Newstead, Melrose. Treasure Trove. Acquired through the KING'S AND LORD TREASURER'S REMEMBRANCER.

(29) Denarius of Macrinus, found by the donor at Station Houses, Trinity Crescent, Edinburgh. Presented by ALEX. TAYLOR, Station Houses, Trinity Crescent, Edinburgh.

(30) Twenty-five typical sherds from a rath at Lissue, Co. Armagh, ninth to tenth century A.D. Presented by BELFAST MUSEUM AND ART GALLERY through Dr G. Bersu, Hon.F.S.A.Scot.

(31) Bronze pin 3.6 inches long, having a flattened discoidal head, labelled "Found at Rossal, Sutherlandshire, E. Bidwell Colln."; silver medal by Pingo, struck after the capture of Carlisle, 1745, in contemporary case. Presented by B. W. J. KENT, F.S.A.Scot.

(32) Iron fragments, mostly the remains of knives, and a small ornamented strip of bronze, found at Freswick Links, Caithness. Presented by SIMON BREMNER, Corresponding Member.

(33) Implement of cetacean bone, found in a kitchen-midden near church on seashore, Bragar, Isle of Lewis. Ladle made from one piece of wood, found at a depth of 6 feet in a peat bank in Bragar, Isle of Lewis, but probably relatively recent. Presented by MURDO MORRISON, Corresponding Member.

(34) Boat scoop (?) consisting of a large, roughly made ladle with short handle made from one piece of drift-wood, found by the donor when peat cutting. Presented by THOMAS THOMASON, Priesthoulland, Eshaness, Northmavine, Shetland.

(35) Two clear rock-crystal charm stones of oval shape set in silver mounts, measuring 2.35 inches by 1.7 inch by .9 inch, and 1.8 inch by 1.3 inch by .6 inch, the larger convex on both faces, the smaller keeled on one face and flat on the other. These were preserved in the family of MacKenzie of Ardloch, from whom the donor is descended. Presented by J. J. GALBRAITH, M.D., D.P.H., F.S.A.Scot.

(36) Two Irish "gun-money" shillings of James II. Presented by Major A. F. COCKBURN, F.S.A.Scot.

(37) Lectern-type sundial from Woodhouselee, Midlothian, formerly at Wrychtis Houses, Edinburgh (see Royal Commission on Ancient and Historical Monuments, *Inventory for Midlothian*, p. 73). Presented by the WAR OFFICE.

(38) Arm-chair of oak, from Whithorn, carved on back "GR ID 1710". Presented by Miss MACVEA, Farend, Isle of Whithorn, Wigtownshire, through J. S. Richardson, LL.D., F.S.A.Scot.

(39) Multi-coloured silk embroidered pin-cushion with similar ribbon attached and tassel at each corner; on the ribbon is embroidered "GOD BLESS P.C. AND", on one side of cushion "DOWN WITH", and on the other "THE RUMP". Presented by The Right Hon. Lord AMULREE, M.D., 18 Egerton Terrace, London, S.W.3.

(40) Oval-shaped gold-mounted dark tortoise-shell snuff-box with oval miniature of Prince Charles Edward Stuart on lid, believed to have been painted at Rome in 1776 (Pl. LVI, 3). Bequeathed by Sir THEOPHILUS GEORGE BIDDULPH, Bart., of The Pavilion, Melrose.

(41) A mourning neck-slide (see Notes, p. 289). Two gold finger-rings. Gold heart-shaped locket, set with garnets with white enamelled gold bow at top bearing a reserved inscription *FIDELLE EN AMITIE*; a gold chain is attached to locket. A wooden trunk 2 feet long, 10 inches high, covered with hide, said to have been carried by General John Cope when he fled on horseback from the battle of Prestonpans in 1745. The wedding dress of Marion Haliburton, married in 1747, maternal ancestor of the donor, made of pink brocaded silk with vertical stripes of applied satin. The lower portions of two embroidered white linen dresses, made by Jean Headrick, the donor's paternal great-grandmother. Presented by Miss E. B. HENDERSON, F.S.A.Scot.

(42) Light grey silk dress with narrow horizontal stripes of black, each having red, green and gold threads; white cotton dress; two cream-coloured cotton dresses. Tail coat and breeches of black serge; tail coat of dark blue serge; pair of nankeen buff-coloured trousers; pair of light green cotton breeches; all of which belonged to Sheriff Adam Urquhart. Presented by the late Miss FLORENCE URQUHART, 23 Gillespie Road, Colinton, Edinburgh 13.

(43) Medal of the Royal Society of Edinburgh inscribed with the name of Robert Bald and the date 22nd August 1822, in a case together with other insignia, viz. diamond-mounted silver star inscribed *SIDERIS POLARIS*; smaller similar star, but gilt, attached to a fleur-de-lis and circular ornament having in the centre a terrestrial globe studded with topazes surrounded by the motto *EX TENEBRIS LUX NOSTRA EFFULGET*; chain of golden links in the shape of alternately terrestrial globes and cockle-shells, with a thistle at either end. Presented by Brigadier R. LESLIE, Lower Mill, near Ashbury, Swindon, Wilts.

(44) Salmon spear, probably from Peebles, length 8 feet 9 inches, the four-pronged head being 1 foot 1.7 inch in length. Presented by B. L. BREMNER, Ivy House, Churchstoke.

(45) White-enamelled iron jug with glass bottom, acquired by the donor from tinkers, who used it for finding fish. Presented by Miss I. F. GRANT, LL.D., Am Fasgadh, Kingussie.

(46) Iron hammer-head, found beside Scalpsie Bay, Bute. Presented by T. H. GOULD, 26 Pyecombe Corner, Woodside Park, London, N.12.

(47) A quantity of copper mails, 0.3 inch by 0.1 inch, and less than 0.025 inch thick. They belonged to John Miller, great-great-uncle of the donor. Presented by Mrs M. H. PATERSON, The Long Croft, Helensburgh, through Fergus Roberts, F.S.A.Scot.

(48) Five dark green and greenish-brown wine bottles, *circa* 1800, having straight sides, dimple bases, from the cellars of Huntly Castle, Longforgan, Angus. Presented by J. S. RICHARDSON, LL.D., F.S.A.Scot.

(49) Iron cheese taster and steel corkscrew. Presented by Miss CAMERHILL, 74 Leamington Terrace, Edinburgh.

(50) Juglet of Barvas ware, 4.5 inches high. Presented by Messrs SIMPSON & MARWICK, W.S., 18 Heriot Row, Edinburgh 3.

(51) Waffle iron, length 27 inches, used in the first half of the nineteenth century by ancestors of the donor. Presented by Mrs LEITCH, St Kitts, 90 Colinton Road, Edinburgh.

(52) Iron peerman, standing on tripod legs, from Galloway. Presented by the Most Hon. FRANCES, MARCHIONESS OF AILSA, F.S.A.Scot.

(53) Brass gaming counter. Presented by J. W. H. JOHNSON, F.S.A.Scot.

(54) Iron six-pounder shot; found when drain-cutting at Leanach Farm, Culloden Moor; two ballot-paper stamping instruments; a wooden striker; and a copper commissary seal of Inverness-shire, said to belong to the time of George II. Presented by MURDOCH MACINTOSH, F.S.A.Scot.

(55) Thirty-six bookbinders' finishing tools, and a brass armorial book stamp, made by R. Sclater & Son, Edinburgh, and used by the donors. Presented by Messrs HENDERSON & BISSET, Bookbinders, Edinburgh, per Mr Campbell White, partner.

(56) Dundee beggar's badge of lead, a defective casting, found when the Old Town House was being demolished about 1932. Silver shield-shaped badge, inscribed "Scottish Central Railway. Free Ticket"; silver badge, oval, inscribed "Edinburgh & Glasgow Railway"; circular brass badge, stamped "2nd CLASS 72", said to have been issued to a servant of the Edinburgh and Glasgow Railway. Presented by T. BARLOW, 16 Northfield Circus, Edinburgh.

Purchases.

(1) Stone mace-head of cushion type, found between the Cross and Swanibost Rivers, Ness, Lewis.

(2) Bronze looped palstave, the butt broken off, and most of the loop missing, existing length 5.8 inches, found near Craignethan Castle, Lanarkshire, in 1841.

(3) Objects formerly in the collection of Joseph Train, the nineteenth-century antiquary: Bronze dagger with broad midrib, probably from Arieland Moss, Kelton; torc of bronze, said to have been found near Dungyle Camp, Kelton, Kirkcudbrightshire, and plain bronze ring, diameter 2.95 inches, also found near Dungyle Camp; carved bookcase of oak in three parts, said to have been made from a bedstead from Threave Castle, Kirkcudbrightshire; bowl of thin bronze, 4.6 inches diameter, in poor condition, with holes in bottom and part of side missing, said to be the hangman's ladle of Dumfries (for which see McDowall's *History of Dumfries*, pp. 694-5, where the ladle, abolished in 1796, is said to have been of iron); damaged pewter quail, diameter 2.4 inches. (See Notes, pp. 290, 293.)

(4) Finger-ring of cast bronze, the bezel containing an openwork triskele, found at Belmont, Lowe Road, Forfar. (See *Proceedings*, vol. lxxix. p. 173.)

(5) Small collection of pins, combs, etc., from Freswick Links.

(6) Gold ampulla, in case, used at the Coronation of Charles I at Holyrood in 1633. (See p. 237.)

(7) Back sword with a "mortuary" chiselled basket hilt.

(8) Painted gesso panel in plain wooden frame, 4 feet by 3 feet 3 inches, apparently commemorating a visit to the Fleet by Queen Anne and her husband, Prince George of Denmark. The panel came from Montrose. (See *The Reliquary*, New Series, vol. i (1895), pp. 34-5.)

(9) Shoemaker's measuring rod, with the date 1788 carved on it (Pl. LVI, 2).

(10) Quilled green glass snuff mull, horn-shaped, with rim and hinged lid of tin.

(11) Bicycle of French make, with iron frame and red-painted wooden wheels with iron tires, used near Edinburgh.

(12) Two Aberdeen groats of Robert III, from Fortrose Hoard and Sheriff Mackenzie Collection.

(13) Silver medal commemorating the Chancellorship of John Campbell, Earl of Loudoun, 1645. Two silver and one bronze medal commemorating the attempted invasion of Scotland, 1706. Silver medal ridiculing the attempts by Prince James to recover the throne in 1708 and 1716.

(14) Twenty copper farthing tokens: Arbroath, Bathgate, Dundee, Edinburgh (11), Glasgow (2), Kirkealdy, Linlithgow, Newburgh and Rutherglen. Sixteen copper and brass halfpenny tokens: Ayrshire, Edinburgh (13), Perth (2). One copper penny token: Inveraray.

DONATIONS TO AND PURCHASES FOR THE LIBRARY, 1947-48.

Donations.

(1) The Deglaciation of Scotland. By A. D. Lacaille. (Offprint from *Proc. Geol. Assoc.*) Presented by THE AUTHOR.

(2) Langeland (1929) and Blandebjerg (1943). By J. Winther. Presented by LANGELANDS MUSEUM, RUDKØBING.

(3) Nuevas Fechas Para la Cronologia Prehistorica de la Europa Atlantica and The Significance of Cord Ornamented Bell-Beakers. By Professor V. Gordon Childe, D.Litt., D.Sc., F.B.A., V.-P.S.A., F.S.A.Scot. Presented by THE AUTHOR.

(4) Die Burg Vucedol. By R. R. Schmidt. Serta Hoffilleriana, 1940. Presented by the CROATIAN ARCHAEOLOGICAL MUSEUM, Zagreb.

(5) Sculpturings on the Caves of Wemyss. By G. B. Deas, F.S.A.Scot. (Offprint from Rothmill Quarterly Magazine.) Presented by Sir DAVID RUSSELL, LL.D., F.S.A.Scot.

(6) The Mildenhall Treasure. Presented by the TRUSTEES OF THE BRITISH MUSEUM.

(7) The Alfred and Minster Lovel Jewels. Presented by the KEEPER OF THE ASHMOLEAN MUSEUM, Oxford.

(8) Scottish Crafts. By Ian Finlay. Presented by THE AUTHOR.

(9) History of the Culdees. By J. Jamieson, D.D., F.R.S.

Settlements and Roads of Scotland. By Grace Meiklejohn, M.A.

The Stone Ages in North Britain and Ireland. By the Rev. Frederick Smith.

Air Photography for Archaeologists. By O. G. S. Crawford, B.A., F.S.A., Hon.F.S.A.Scot.

Le Più Antiche Civiltà Nordiche. By P. Laviosa Zambotti.

I Dolmen e La Civiltà del Bronzo. By Dr Michele Gervasio.

Saltire Society Exhibition: Highland Traditions (Catalogue, 1948).

Exhibition of rare embroidery, etc. (Catalogue, 1948).

Proceedings of the Scottish Anthropological and Folklore Society, vol. iii. No. 3 (1948).

Archæological News Letter, Nos. 1-7.

Presented by R. B. K. STEVENSON, M.A., F.S.A.Scot.

(10) Scottish Notes, No. 1. By F. A. Greenhill, M.A., F.S.A.Scot. (Offprint from *Trans. Mon. Brass Soc.*) Presented by THE AUTHOR.

(11) Gayre's Booke—A History of the Family of Gayre, vol. i. By Lieut.-Colonel G. R. Gayre and R. L. Gair, F.R.G.S. Presented by THE AUTHORS.

(12) Society of Friends of Dunblane, vol. v. part ii. (1947).

(13) The Chiefs of the Clan Macpherson. By Macpherson of Dalchully. Presented by THE AUTHOR.

(14) Journal of the Clan Chattan Association, vol. ii, No. 2.

(15) Report of the Annual Meeting of the Clan Lindsay Society, 1947.

(16) The Adam Carse Collection of Musical Wind Instruments. Presented by THE CURATOR, Horniman Museum and Library, London.

(17) The Bank of Scotland, 1695-1945. By Charles A. Malcolm, M.A., Ph.D. Presented by the GOVERNOR AND COMPANY OF THE BANK OF SCOTLAND.

(18) A Century of Bookbinding in Edinburgh. By Campbell White. Presented by THE AUTHOR.

(19) Dundee Royal Infirmary, 1798-1948. By Henry J. C. Gibson. Presented by THE AUTHOR.

(20) History of Bromsgrove Cottage Hospital.

(21) *Archæologia Scotica*, vol. i. Presented by Miss E. B. HENDERSON, F.S.A.Scot.

(22) *Field Archæology*. By R. J. C. Atkinson. Presented by F. A. FERGUSON, F.S.A.Scot.

(23) *Folklife Studies in Britain*. By R. U. Sayce. Presented by THE AUTHOR.

(24) *South Uist*. By A. Cullen. (Typescript.) Presented by THE AUTHOR.

(25) *Society for the Protection of Ancient Buildings*. Report.

(26) *Tribute to Sir George Hill*.

(27) *Revista de Guimaraes*, vol. lvii. Nos. 1-2 (January-June 1947).

(28) *Information Bulletin of the Czechoslovak Archæological Institute*, Praha, iii. No. 1.

Purchases.

The Dawn of European Civilisation. New 4th Edition, 1947. By V. Gordon Childe.

A Survey and Policy of Field Research in the Archæology of Great Britain. Council for British Archæology publication.

Danske Oldsager, Aeldre Stenalder. By T. Mathiassen.

Sydvestnorske Helleristninger. By Eva and Per Fett.

Stone Age in North America. By W. K. Moorehead.

Das Grabfeld von Vasterbjers auf Gotland. By Marten Stenberger, Elias Dahr and Henr. Munthe.

A Find of the Early Iron Age from Llyn Cerrig Bach, Anglesey. By Sir Cyril Fox.

The Meare Lake Village, vol. i. By Arthur Bulleid and Harold St George Gray.

Das Wittnauer Horn. By Professor Gerhard Bersu.

Metalltechnik under Forhistorisk Tid, Del. i and ii. By Andreas Oldeberg.

The Roman Imperial Coinage, vols. i-iv., parts 1 and 2, v, parts 1 and 2. By H. Mattingly and E. A. Sydenham.

The Roman Army. Report of a Summer School at York, May 1944.

A Roman Villa at Langton, near Malton, East Yorkshire. By Philip Corder and John L. Kirk.

Terra Sigillata of Margidunum. By F. Oswald.

Roman Britain. By Ian A. Richmond.

Roman Britain, the Objects of Trade. By Louis C. West.

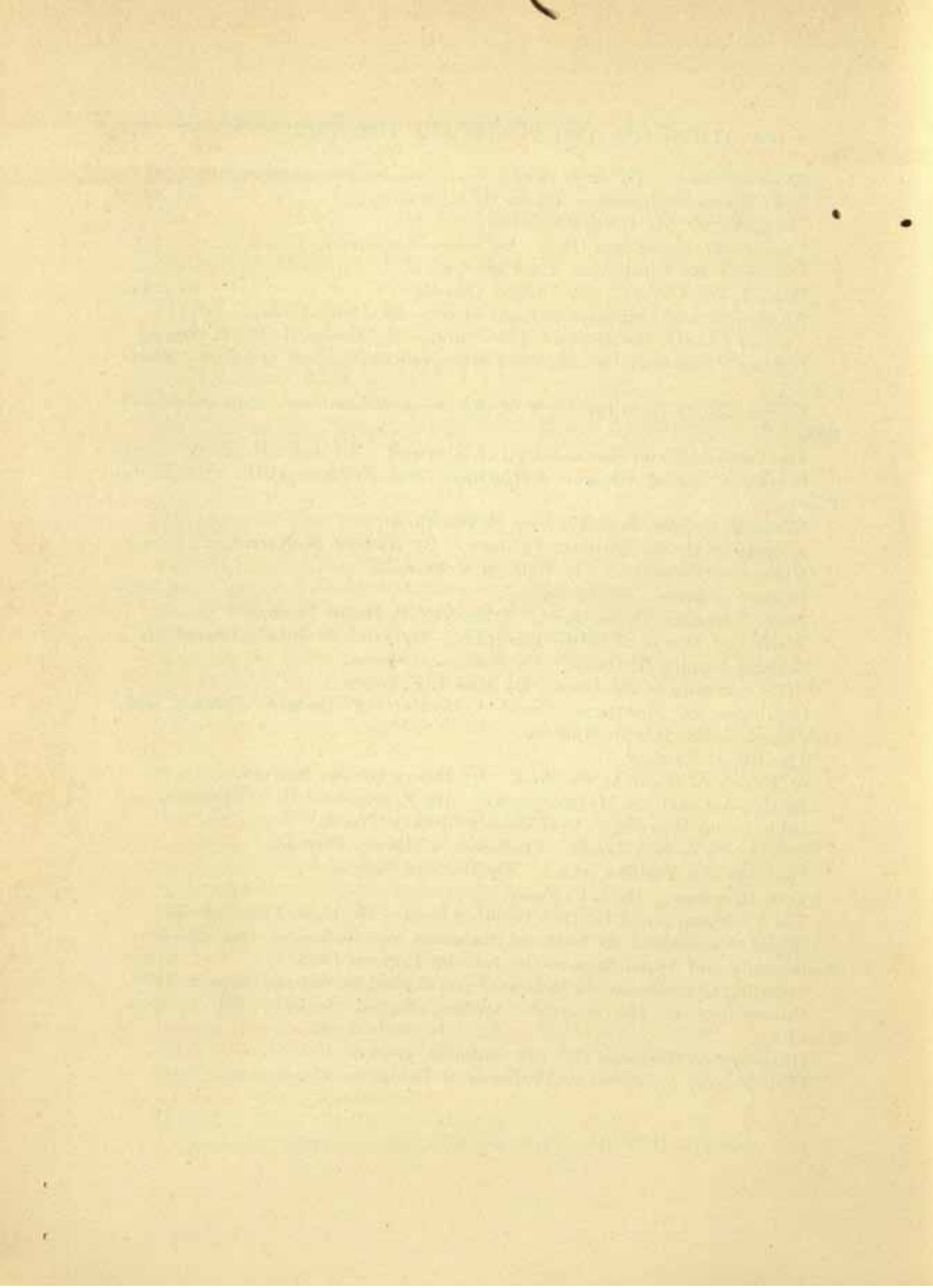
Roman Gaul, the Objects of Trade. By Louis C. West.

Das Leder und seine Verarbeitung im Römischen Legionslager Vindonissa. By August Gansser-Burckhardt.

Merlin's Island. By T. C. Lethbridge.

Anglo-Saxon England. 2nd Edition, 1947. By F. M. Stenton.

- Pictish Nation. By A. B. Scott.
- Irish Figure Sculptures. By E. H. L. Sexton.
- Valsgårde 6. By Greta Arwidsson.
- Vendelstille, Email und Glas. By Greta Arwidsson.
- Die Saxe von Valsgårde. By Pär Olsen.
- Birka I, Die Gräber. By Holger Arbman.
- Sutherland and Caithness in Saga Time. By James Gray.
- Ancient Church Dedications in Scotland. By James M. Mackinlay.
- Wallace Collection Catalogue of European Arms and Armour. Parts i and ii.
- Heroic Poetry from the Book of the Dean of Lismore. Edited by Neil Ross.
- The Cathedral and Royal Burgh of Kirkwall. By John Mooney.
- Double Choir of Glasgow Cathedral. 2nd Edition, 1916. By T. L. Watson.
- Medieval English Pottery. By B. Rackham.
- Kintyre in the Seventeenth Century. By Andrew McKerral.
- History of Dumfries. By William McDowall.
- History of Ross. By R. Bain.
- Early Travellers in Scotland. Edited by P. Hume Brown.
- Waifs and Strays of Celtic Tradition. By Lord Archibald Campbell.
- Zetland Family Histories. By Francis J. Grant.
- The Lordship of the Isles. By Miss I. F. Grant.
- Catalogue of Montague Guest Collection of Badges, Tokens, etc. Published by the British Museum.
- The Royal Maundy.
- A History of Music in Scotland. By Henry George Farmer.
- British Art and the Mediterranean. By F. Saxl and R. Wittkower.
- Inkle Loom Weaving. Craftsmen's Library, No. 4.
- The Cradle or Box Loom. Craftsmen's Library, No. 23.
- Costume and Fashion, vol. i. By Herbert Norris.
- Folk Museums. By I. C. Peate.
- The Preservation of Leather Bookbindings. By H. J. Plenderleith.
- Royal Commission on National Museums and Galleries—Oral Evidence Memoranda and Appendices to the Interim Report, 1928.
- Standing Commission on Museums and Galleries—Second Report, 1938.
- Proceedings of the Scottish Anthropological Society, vol. i. Nos. 2 and 3.
- Directory of Museums and Art Galleries, 1948.
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INDEX

	PAGE
Aberdeenshire, Bronze Axes from Rhynie parish,	292, 293, 317
— Woodsman's Axe from Loch Kinord,	297
— Beaker from Sundayswells Hill,	317
Aberfeldy, Cup-marked Stones at Glassie and Laidnaskea near,	304-6
Acre extent of a merkland,	286-8
Adams, Professor Arthur, elected,	310
Agriculture, meaning of <i>davach</i> ,	49-52
Ailsa, Marchioness of, Frances, F.S.A.Scot., donation by,	321
Alcock, Leslie, Oxford, donation by,	318
Amber Bead from Orrook, Burntisland,	307
Amisfield Tower, Dumfriesshire, Door from,	291, 292
Ampulla, Gold, used at Scottish Coronation of Charles I,	237-41, 312
Amsterdam, bellfounders at,	149, 150, 187
Amulets, parts of pots used as,	19
Amulree, Lord, M.D., donation by,	319
Ancient Monuments Department (Ministry of Works), undertake responsibility for Cairnpapple Hill site,	74, 75
Anderson, Rev. James, M.A., B.D., elected,	310
An Dùn, Argyll, Fort of,	57
Angus, William, LL.D., presides at meetings,	314
Angus (Forfarshire), Short Cist at Knock-hill,	295, 296, 317
— other objects,	317, 322
Animal remains, from Hownam Rings,	223, 224
Anne, Queen, Panel of her visit to the Fleet,	322
Anniversary Meeting, 1948, and Annual Report, 1947-48,	300-14
Anointing at coronation, methods of,	240-1
Arbor Low affinities,	113, 114
Archer, Sir Gilbert, deceased,	310
Ardoch, Roman fort at, Relics from,	317
Argyll: Craignish antiquities,	52-60
Armchair, Oak, from Whithorn,	319
Armlets, Bronze,	307, 308
— Glass, from Hownam Rings,	211, 212, 219
— Gold, from Kirkmaiden,	293
Arrochar, Bells at,	178
Arrowheads, Flint, donation of,	316

	PAGE
Arts, Mijnheer Jan, of Tilburg, Holland, an expert on bells and bellfounders,	150, 151
Ashmolean Museum, Oxford, donation by Keeper of,	323
Atkinson, R. J. C., elected,	310
Axes, donations of,	315, 316, 317
— Hoard of flat bronze, from Rhynie, Aberdeenshire,	292, 293, 317
— Manufacture of, in North Wales and Lake District,	69, 80, 102, 103, 112, 123
— Neolithic, from Hownam Rings,	215, 224
— Woodsman's, or carpenter's, from Loch Kinord, Aberdeenshire,	297
Badges, donation of,	321
Bàgh Dail nan Ceann, Cairn at,	60
Bàgh Dùn Mhuilig, Cist at,	59
Balbie Farm, Burntisland, Bronze Age Cist at,	299-301
Baldwin, Albert H. F., elected,	314
Balls, Stone,	293, 317, 318
— — from Unival, North Uist,	12, 29
Balmaclellan, Diamond twill cloth found at,	225-7, 230
Bank of Scotland, Governor and Company of, donation by,	323
Barlow, T., Edinburgh, donations by,	321
Barpa Langass, Chambered Tomb of,	2
Barry, Sir Francis Tress, excavations by, in Caithness,	124, 129
Baton, Police, gift of,	316
Bead, Amber, from Orrook, Burntisland,	307
— Blue Glass, from Hownam Rings,	218, 220
— Discoid, of Sandstone, from "Wag" of Forse, Caithness,	277, 284
Beads, Falence,	39 and n., 43
Beaker, from Fettercairn,	295
Beakers, donations of,	315, 317
— from Cairnpapple Hill, West Lothian,	104-6
— Hebridean,	26 and n., 40
Beaton, George S., librarian, Inverurie, elected,	310
— — Note on Axe from Loch Kinord by,	297
Beggar's Badge,	321
Beinn an Duin, Argyll, Fort of,	57

	PAGE		PAGE
Belfast Museum and Art Gallery, donation by,	319	Burnet, Rev. George B., M.A., Ph.D., elected,	315
Belgium, bellfounders of,	149	Burnhouse, Midlothian, Old Bell at,	148
Bellfounders, firms of,	147 <i>et passim</i> to 192	Burntisland, Bronze Age Cist at Balbie Farm,	299-301
Bells, Church, of Renfrewshire and Dunbartonshire,	146-92	— Cairn burial at Orrock,	306-8
— Scottish, methods of ringing,	146, 147	Buteshire, Objects from,	318, 320
Bersu, Dr Gerhard, Report on excavation of "Fort" at Scotstarvit Covert, Fife,	241-63		
— Rectangular Enclosure on Green Craig, Fife,	264-75	Caird & Co., Messrs, bellfounders, Greenock,	155
Berwickshire, Objects from,	317, 318	Cairn burial of Bronze Age at Orrock, Burntisland,	306-8
Bicycle, of French make, presented,	322	Cairnpapple Hill, West Lothian, excavations at,	68-123
Biddulph, Sir Theophilus G., Bart., donation by,	312, 319	— name,	71, 118
Birsay, Orkney: primitive type of hearth,	134	— dating,	76, 100, 118, 119
Black, George F., Ph.D., deceased,	310	— finds,	101-10
Blackchester Fort, Oxtun, Relic from,	317	— history of site, by periods,	111-18
Boat Scoop or Ladle,	319	— geology and petrology,	120-3
Bone Implements, donation of,	318, 319	— preservation of site and excavations,	74, 75
Bonhill, Dunbartonshire, Bells at,	176, 178, 179	Cairns, in Craignish parish, Argyll,	59, 60
Boog Watson: <i>see</i> Watson.		Caithness, Broch at Skitten,	124-45
Bookbinders' Tools, Sets of,	321	— "Wag" of Forse,	275-85
Books presented and purchased,	322-5	— Objects from,	317, 319
Borenus, Tancred, D.Lit., Ph.D., deceased,	310	Calder, Charles S. T., A.R.I.A.S., F.S.A.Scot., Report on the excavation of a Broch at Skitten, in the Kilmaster district of Caithness,	124-45
Bottles, Wine, donation of,	320	— donations by,	138, 317
Braidwood, Fort at, Relics from,	317	Callanish, Isle of, Lewis, Relics from,	316
Brass Plate, with engraving of children, in Kirkcudbright Museum,	297, 298	Cappuck, Roman Fort at, Antiquities from,	311, 316
Bremner, B. L., Churchstoke, donation by,	320	Cardross, Bells at,	179, 180
— Simon, Freewick, donation by,	319	Carlisle, Medal struck to commemorate capture of (1745),	319
Bridge of Weir, Renfrewshire, Bells at,	153, 162-4	Carter, Charles, M.Sc., elected,	314
Britain, South, Refugee labour from,	204	Castle Semple, Renfrewshire, Bells at,	153
British Museum Trustees, donation by,	323	Cathcart, Bells at,	154
Brittany, Cultural relations with Hebrides,	39-47	Caverhill, Miss, Edinburgh, donation by,	321
Broch at Skitten, Caithness,	124-45	Celtic land measurement,	49-52
— radial compartments,	130-3	Cemeteries, Cremation,	60, 112
— hearths,	134, 135	Chalmers-Jervise Prize, Report on,	313
— rampart,	135-7	Charcoal, use of, in tomb burials,	14, 22, 33, 34
— relics,	138-45	Cheese Taster,	321
— "wooden,"	254 n., 255 n.	Childe, Professor V. Gordon, D.Litt., D.Sc., donation by,	322
Bromsgrove Cottage Hospital, History of,	323	Choir Stalls, Oak, from Lincluden Church,	288, 289
Bronze Age burials, at Cairnpapple Hill, West Lothian,	70, 99, 100, 114-6, 122	Church Bells: <i>see</i> Bells.	
Bronze objects, donations of,	315, 316, 317, 319, 321, 322	Cinerary Urns, from Cairnpapple Hill, West Lothian,	108-10
— pins, armlets, and rings,	307, 308	— from Milngavie,	302, 303
Brown, Donald, deceased,	310	Cist, used for more than one burial,	301
Bruce, George, elected,	310	— Bronze Age, at Balbie Farm, Burntisland,	299-301
Bryce, William, J.P., elected,	310	— Long, at Leuchars, Fife,	298, 299
Burgerhuys, family of, Dutch bellfounders,	149, 171, 175, 179, 192		
Burges, David, bellfounder, Glasgow,	152, 161, 189		
Burgh, meaning of word,	52		
Burials, more than one in same cist,	301		

	PAGE		PAGE
Cist, Short, at Knockhill, Kirkden, Angus,	295, 296	Cullen, A., donation by,	324
— with boulders inside and on top,		— Robert H., elected,	314
possibly sacrificial,	281, 283	Cumbernauld, Bells at,	181, 182
Cists, on Cairnpapple Hill, West Lothian,		Cup-marked Stones in cist walls,	116
95-8, 122		— at Glassie and Laidnaskea, near Aber-	
— in Craginish parish, Argyll,	59, 60	felly,	304-6
Clan Chattan Association, donation by,	323	Curle, Alexander O., C.V.O., LL.D., Further	
Clan Lindsay Society, donation by,	323	Excavation of "Wag" of Forse,	275-85
Clark, Rev. Ivo Macnaughton, B.D., Ph.D.,		— — — presides at meetings,	314, 315
elected,	314		
— William Fordyce, deceased,	310	Daggers,	40 and n.
Cletraval, North Uist: Chambered Tomb,		— Bronze, from Kelton,	321
1, 2, 29-32, 47-9		Dark Age, fortified sites of,	195, 223
— — — Pottery,	25, 26	Davach, What was a?,	49-52
Climate, changes of, indicated by excava-		Davidson, J. M., O.B.E., F.C.I.S., F.S.A.,	
tions at Cairnpapple Hill, West		F.S.A.Scot., read a paper on A Mote	
Lothian,	118, 119	in Glen Devon, Perthshire,	315
Cloth, Twill and Tartan, from Balmacellian		— — — presides at meetings,	314, 315
and Falkirk,	225-31	Deans, John Bell, elected,	315
Clouston, Ranald W. M., B.Sc.(Eng.),		Dickie, Miss K. M., elected,	310
F.S.A.Scot., The Church Bells of		Doig, Major William Howie, C.E., deceased,	310
Renfrewshire and Dunbartonshire,	146-92	Donations to Museum, 1947-48,	315-21
Clydebank, Bells at,	180, 181	— to Library, 1947-48	322-4
— Neolithic Pottery from,	234-7	Duff, James, & Sons, bellfounders, Greenock,	
Cockburn, Major A. F., F.S.A.Scot., dona-		153, 157, 159, 166, 171, 189	
tion by,	319	Duff-Dunbar, Mrs L., of Ackergill, deceased,	310
Coins, donations of,	316, 318, 322	Duffy, Mrs Marion Gay, elected,	310
Collars: see Torcs.		Duine, Argyll, Fort of,	57
Combs, Wool, donation of,	316	Dumbarton, Bells at,	182-4
Cooper, Roland Edgar, elected,	315	Dumfries Burgh Museum, Painted Wooden	
Cope, General John, Hide Trunk belonging		Panel lent by,	288, 289
to,	320	Dumfriesshire, Traces of Roman road near	
Corkscrew, Steel,	321	Raeburnfoot,	231-4
Coronation of Charles I. in Scotland, Gold		Dùn, Wooden,	254 n., 255 n.
Ampulla used at,	237-41	Dùn Ailne, Argyll,	57
Costumes, donation of,	320	Dùn an Achanarnich, Argyll, Fort of,	58
Council, members of, and office-bearers, for		Dunan Garbh-Sròine, Argyll, Fort of,	57, 58
the year 1948-49,	309, 310	Dunbartonshire, Church Bells of, described,	
"Cove" Monuments, 78, 79, 86, 89-92, 112, 113		146, 174-92	
Covenant, Deeds of, operation of,	313	— Cinerary Urn from Milngavie,	302, 303
Cox, Douglas H., deceased,	310	— Neolithic Pottery from Knappers	
Craginish, Antiquities in Parish of,	52-60	Farm,	234-7
Craigston Castle,	64	Dunblane, Society of Friends of, donation	
Crawford, Hew, of Cloberhill,	148	by,	323
Cremation, un-urned,	41	Duncan, James, deceased,	310
Croatian Archeological Museum, Zagreb,		Dùn Glas, Argyll,	57
donation by,	322	Dunham, Dr K. C., reports on a cup-marked	
Cromarty, Castle of, Old,	60-8	stone in Perthshire,	305
— Old "mote" of,	63	Dùn Mhuilig, Craginish parish,	53-5
— St Norman's market,	63	Dunscaith, on Cromarty Firth,	60, 61
— Earl of, George,	62		
Cross-slab, from site of Leuchars Castle,		Eaglesham, Bell at,	154
Fife,	299	East Lothian, Objects from,	318
Crowfoot, Mrs Grace M., Two Textiles from		Eastwood, Renfrewshire, Bell at,	155
the National Museum, Edinburgh,	225-31		

	PAGE
Edinburgh, bellfounders in,	177
— Bells in St Cuthbert's, St Andrew's and St Mary's (Cathedral),	147, 177
— Sundial from Wrights Houses,	319
— Sherds from Blackford Hill Fort,	318
— Coin from Trinity,	318
— Stone Axe from Craigentenny,	316
Eeles, Dr Francis C., F.S.A.Scot., his descriptions of Scottish bells,	146, 147
Eglinton, Countess of, gave consent for purchase of gold ampulla,	238
Eilean an Duin, Argyll, Fort on,	57, 58
Eilean an Tighe, Neolithic site on,	1, 22, 36
— Pottery Kiln,	24, 25 n.
Eilean Carnaich, Cairn on,	60
Elgin, davachs of land in,	50, 51
Elbank, Lord, possessor of Cromarty,	62
Erskine, Renfrewshire, Bell at,	155
Eskdale, Dumfriesshire, Traces of Roman road,	231-4
Etherdour, Castle of, Ross,	60
Ewen, Mrs J. T., Pitscandly, donation by, 205, 317	
Excavations, Report on, for 1947-48,	313
Falkirk, Tartan cloth found at,	227-30
Farm, or Homestead, of Iron Age, 258-61, 272-4	
Feachem, R. W., elected,	310
— donation by,	318
Fellows deceased, List of,	310
— elected, Lists of,	310, 314, 315
Ferguson, F. A., F.S.A.Scot., donation by,	324
Ferguson-Watson, H., M.D., Ph.D., deceased,	310
Fettercairn, Beaker from,	295
Fifeshire, Excavation of "Fort" at Scots- tarvit Covert,	241-63
— Rectangular enclosure on Green Craig, 264-75	
— Long Cist at Leuchars,	298, 299
— Cross-slab at Leuchars,	299
— Bronze Age Cist at Balbie Farm, Burntisland,	299-301
— Cairn burial at Orrock, Burntisland,	306-8
Films, exhibition of,	314
Finlay, Ian, F.S.A.Scot., donation by,	323
Fish Spears,	316, 320
Flint Knives, from Knappers Farm, Dun- bartonshire,	234-6
— from Scotstarvit Covert, Fife,	263
— Objects of, presented,	316
Food Vessel, at Knockhill, Kirkden, Angus,	296
— at Burntisland,	301
Forestry Commission, H.M., donation by, 292, 312, 317	
Forfarshire: see Angus.	

	PAGE
Forse, Caithness, further excavation of "Wag,"	275-85
Forsyth, William Spence, elected,	310
Forts, in Craginish parish, Argyll,	53-8
— of non-defensive type,	257-61, 272-4
— Hill-, of Iron Age and Dark Age, 195, 198, 220-3	
Fortune, John R., at Peebles, donation by,	318
— Mr, at Threeburnford, Channelkirk, donation by,	318
Fotheringham, Andrew M., J.P., elected,	310
Fraser, Sir John, K.C.V.O., M.C., M.D., LL.D., deceased,	310
Freswick Links, Caithness, Objects from,	319, 322
Gair, R. L., F.R.G.S., donation by	323
Galbraith, J. J., M.D., F.S.A.Scot., dona- tions by,	312, 319
Games: Brass gaming counter,	321
Gardyne, Captain Bruce, of Middleton, Angus, donation by,	295, 317
Gayre, Lieut.-Col. G. R., donation by,	323
Gemmil, in Craginish parish, Argyll, Cist and Cairn,	59, 60
Gibb, J. T., deceased,	310
Gibson, Henry J. C., donation by,	323
Gillespie, Alexander M., O.B.E., M.D., elected,	310
Gillett & Johnston, Messrs, bellfounders, Croydon, 152, 158, 163, 169, 177, 178, 181, 182, 187	
Glass objects, from Hownam Rings, 211, 212, 218, 219, 220	
Glassie, Aberfeldy, Cup-marked Stones near, 304, 305	
Glen Devon, Perthshire, Mote in,	315
Glenluce Pottery,	29
— Sands, Objects from	316
Gold Ampulla, used at Scottish coronation of Charles I,	237-41, 312
— Armlet, Penannular, from Kirkmaiden,	293
Goodall, Rev. William H., elected,	310
Gorbals Bell Foundry,	152, 155, 180, 190
Gould, T. H., London, donation by,	320
Gourcock, Bells at,	155, 156
Govan, Bells at,	156
Graham, Angus, M.A., F.S.A., on Anti- quities in Parish of Craginish,	52-60
— The Roman Road to Raeburnfoot,	231-4
Grain, Drying of,	4 and n.
Grange, Richard M. D., elected,	315
Grant, Miss I. F., LL.D., Kingussie, dona- tion by,	320
Green Craig, Fife, excavation of rectangular enclosure,	264-75

	PAGE		PAGE
Greenhill, Frank A., M.A., F.S.A.Scot., Note on Monumental Brass in Kirkcudbright Museum,	297, 298	Hunting, Wing-Commander G. L., Hexham, donation by,	317
— donation by,	323	Hut-circle analogies,	246, 272
Greenlaw, Kirkcudbrightshire, Carved Oak Panels from,	290-2	Iberian Pottery, in relation to Hebrides, 26 n., 34 n., 38, 40, 41	
Greenock, Church Bells of,	151, 157-60	Inchinnan, Renfrewshire, Bells at,	160
Gunning Fellowship, Award of,	313	Innes of Learney, Sir Thomas, K.C.V.O., donation by,	312, 317
Halliburton, Marion, Wedding Dress of,	320	Inverkip, Renfrewshire, Bells at,	160
Halliday, Rev. Alexander, deceased,	319	Inverness-shire, Davachs of land,	50, 51
Hamilton, John R. C., M.A., elected,	310	Iron, objects of, donations of, 316, 317, 319, 320, 321	
— Mr McNeill, donation by,	312, 317	— Waffle, donation of,	321
Hammer-stones, from Forse "Wag,"	283, 284	Iron Age burials, at Cairnpapple Hill, West Lothian,	70, 100, 117
— presented,	316	— farm or homestead, at Scotstarvit Covert, Fife,	258-61
Hartley, C. E., Harrogate, donation by,	316	— also (possibly) at Green Craig, Fife,	272-4
Hatchet, Iron, donation of,	317	— "Wag" of Forse, Calthness,	275, 282
Hazel, Carbonised,	122	— hill-forts,	195, 196, 220-3
Headrick, Jean, Dresses made by,	320	Jacobite period, Medals of,	319, 322
Hearths: Method of keeping peat-fires alight,	279, 280	Jedburgh, Relics from Castle and Abbey of,	316
— Persistence of a primitive type in Caithness and Orkney,	134	Johnson, J. W. H., F.S.A.Scot., donation by,	321
Helensburgh, Bells at,	184-6	— Norman, Note on Cross-slab at Leuchars, Fife,	299
Helmets, donation of,	316	Johnstone, Renfrewshire, Bells at,	161
Henderson, Miss E. B., F.S.A.Scot., dona- tions by,	289, 312, 320, 324	Jug, with glass bottom,	320
Henderson & Bisset, Messrs, Edinburgh, donation by,	312, 321	Juglet, of Barvas ware,	321
Henge Monument, at Cairnpapple Hill, West Lothian,	73-92, 113-5	Kennedy, William, Abbot of Crossraguel,	149
— robbed of its stones,	95	Kent, B. W. J., F.S.A.Scot., donation by,	319
— other henge monuments,	114	Keys and Locks, donation of,	316
Highlands, land measurement in,	287, 288	Kilbarchan, Renfrewshire, Bells at,	161
Hill, Professor W. C. Osman, reports on skeletal remains,	301	Kilellan, Renfrewshire, Bells at,	161, 162
Hill-forts of Iron Age,	195, 196, 220-3	Kilmacoll, Renfrewshire, Bells at,	162-4
Hog, family of, bellfounders,	148, 149, 162, 177	Kilmarnock, Dunbartonshire, Bell at,	186
Holland, bellfounders in,	149-51	Kilmster, Broch at,	124-45
Homesteads, their place in archaeological sequence,	195, 196, 198, 200, 206	— See also Skitten.	
— and non-defensive "forts,"	258-60, 272-4	Kincardineshire, Beaker from Fettercairn, 295, 317	
Hooper, John E., Innerleithen, Note on Long Cist at Leuchars, Fife,	298, 299	King's and Lord Treasurer's Remem- brancer, donation by,	312, 318
Horniman Museum and Library, London, donation by,	323	Kinord, Loch, Aberdeenshire, Axe found in,	297
Houston, Renfrewshire, Bells at,	160	Kirkcudbright Museum, Brass Plate with engraving of children,	297, 298
Hownam Rings, Roxburghshire, account of excavations,	193-225	Kirkcudbrightshire, Carved Oak Bed and Door Panels,	290-2
— chronology,	198, 200, 206, 211, 212, 317	— Objects from Joseph Train Collection,	321
— pottery,	212-20	Kirkden, in Angus: see Knockhill.	
— other finds,	208, 311-20	Kirkintilloch, Bells at,	175, 176, 187-90
Human remains, at Broch of Skitten, Caithness,	144-5		
Hunter, Charles Stewart, M.D., elected,	310		

	PAGE		PAGE
Knappers Farm, Clydebank, finds of neo-lithic pottery,	234-7	Macdonald, Henry Lachlan, deceased,	310
Knives, Flint, from Knappers Farm, Clydebank,	234-6	McErlach, R., deceased,	310
— from Scotstarvit Covert, Fife,	263	MacFadyen, Rev. Archibald, deceased,	310
— Iron, distribution of,	219, 220	Macintosh, Murdoch, F.S.A.Scot., donations by,	321
— donations of,	319	Mackay, Dr N. D., Aberfeldy, Note on Cup-marked Stones near Aberfeldy,	304-6
Knockhill, Kirkden, Angus, Short Cist at,	295, 296	— donation by,	316
Knocking-stones,	138, 139	— Rev. P. H. R., elected,	310
Knox, William Barr, deceased,	310	Mackenzie, Sir George, of Tarbat,	62
Koster, Gerard, bellfounder, Amsterdam,	149, 175, 176, 187	— Sir Kenneth, of Cromarty,	62
		— William Mackay, LL.D., on Old Cromarty Castle,	60-8
Lacaille, A. D., F.S.A.Scot., donation by,	322	McKerral, Andrew, C.I.E., M.A., on What was a Davach?,	49-52
Ladle, Hangman's, (Dumfries), donation of,	321	— Note on The Acre Extent of the Merkland,	286-8
Laidnaskea Farm, Aberfeldy, Cup-marked Stone at,	306	Mackintosh, Mrs Margaret, of Mackintosh, elected,	314
Lamb, Alexander, elected,	314	MacLagan, Douglas Philip, W.S., late Secretary, deceased,	310
Lanarkshire, Objects from,	317, 321	— tribute to,	310
Land measurement, meaning of <i>davach</i> ,	49-52	McLaren, Thomas, F.S.A.Scot., donation by,	317
— The "merkland,"	286-8	Maclaren, Rev. William B., M.A., elected,	310
Langlands Museum, Rudkebing, donation by,	322	MacLean, Archibald John, elected,	310
"Lap" Querns,	280 and n.	Maclean, Dugald, M.A., LL.B., deceased,	310
Leadbetter & Co., Messrs Thomas, bellfounders, Glasgow,	160	MacOwan, Miss Margaret R., Dunblane, donation by,	312, 317
Leighton, Thomas S., elected,	314	Macpherson of Dalchully, Mr, donation by,	323
Leitch, Mrs, Edinburgh, donation by,	321	Macrae, Murdo, Lub an Eorna, donation by,	318
Leslie, Brigadier R., Swindon, Wilts, donation by,	312, 320	McRoberts, Rev. David, elected,	314
Leuchars, Fife, Long Cist at,	298, 299	Mace-heads, donation of,	317, 321
— Cross-slab from the Castle site,	299	Maitland, Alexander, K.C., D.L., elected,	314
Lewis, Isle of, Objects from,	316, 319, 321	Maul, for stone-dressing,	107, 108
Library, donations to, 1947-48,	322-4	Maxwell, Robert, an Edinburgh bellfounder,	149, 177, 179
— purchases for, 1947-48,	324, 325	— Stuart, M.A., elected,	314
— rearrangement and cataloguing of,	311	— Notes on Choir Stalls and Panel from Lincluden,	288, 289
Lignite, Objects of, from "Wag" of Forse, Calthness,	284	— Oak Panels from Greenlaw, Kirkcudbrightshire,	290-2
Lincluden, Collegiate Church of, Oak Choir Stalls from,	288, 289	Maxwell-Stuart, Captain, of Traquair, Choir Stalls lent by,	288
Lissue, Rath at, Co. Armagh, Sherds from,	319	Mearns, Renfrewshire, Bells at,	165
Llewellyns & James, bellfounders, Bristol,	163, 164, 168	Mears, Messrs, Bellfounders, London, 154, 158, 161, 164, 165, 167, 172, 178, 182, 191	
Lochiel Estates, Land measurement on,	287	Measuring Rod, Shoemaker's,	322
Lochwinnoch, Renfrewshire, Bells at,	164, 165	Medals, donation of,	319, 320, 322
Loom, for twill and tartan cloth,	229	Meetings of the Society during 1948,	314, 315
Lothian, Marquess of, donation of "Monteviot Collection" by his Trustees,	311, 312, 315, 316	Meikle, John, hammerman, Edinburgh,	177
Loudoun, Earl of, John, Medal commemorating his Chancellorship,	322	Merkland, Acre extent of a,	286-8
Luss, Dunbartonshire, Bell at,	190	Midlothian, Neolithic pot from Roslin,	294, 295, 315
		— Objects from other sites,	317
McCosh, James, deceased,	310	— See also Edinburgh.	
MacCowan, Rev. R., deceased,	310	Milne, John, bellfounder, Edinburgh,	177

	PAGE		PAGE
Milngavie, Dunbartonshire, Cinerary Urn from,	302, 303	Panel, Painted Gesso, from Montrose, . .	322
Misericords, from Lincluden,	288, 289	— See also Oak Panels.	
Monteviot Collection of antiquities, . . .	311, 312, 315, 316	Paterson, Mrs M. H., Helensburgh, dona- tion by,	320
Morrison, Murdo, in Isle of Lewis, donation by,	319	Paton, Mrs Georgina, Whalsay, donation by, .	318
— William, Isle of Lewis, donation by, .	316	— James, deceased,	310
Morrison & Sons, John, bellfounders, Renfrew,	173	Pebbles, Wrought, donation of,	316, 318
Mote in Glen Devon, Perthshire,	315	Pebbles, Objects from,	318, 320
Mottram, A. Hugh, F.R.I.B.A., elected, . .	310	Peerman, Iron, on tripod,	321
Mourning Neckslides,	289	Pendant, Pumice, axe-shaped,	23, 29, 30, 36
Mowat (Monte Alto), family of,	62	Perthshire, Cup-marked Stones near Aber- feldy,	304-6
Mullach Dubh, Argyll, Fort at,	56, 57, 60	— Other objects,	316, 317
Museum of Antiquities, National, Report on, for 1947-48,	311-3	Peverelle, Rev. Francis W., deceased, . . .	310
— donations to, 1947-48,	315-21	Pewter Quail, donation of,	321
— purchases for, 1947-48	321, 322	Phillip, William C., M.A., elected,	314
Nail-cleaner, Bronze, from Hownam Rings, .	219	Piggott, Mrs C. M., F.S.A., F.S.A.Scot., on Excavations at Hownam Rings, Roxburghshire (1948),	193-225
Necklaces, donation of,	316	— on Late Bronze Age Burial from Orrock, near Burntisland,	306-8
Neckslides, Mourning, Eighteenth Century, .	289	— donation by,	318
Neillson, Renfrewshire, Bells at,	165	— Professor Stuart, B.Lit., F.S.A., F.S.A.Scot., on Excavations at Cairnpapple Hill, Torphichen,	68-123
Neolithic Pottery, from Knappers Farm, Clydebank,	234-7	— Note on Bronze Age Cist at Balbie Farm, Burntisland,	299-301
— from Roslin, Midlothian,	294, 295	Pincushion, Silk, donation of,	319
— Sanctuary and Cemetery at Cairn- papple Hill, West Lothian,	69	Pins, Bronze, donation of,	307, 319, 322
New Kilpatrick, Dunbartonshire, Bell at, .	186	— from cremation cemeteries,	78, 101, 110, 123
— Urn from,	303	— distribution of the long pin,	41, 42
Oak, Carbonised,	106, 107, 122	Pistols, donation of,	316
— Choir Stalls of, from Lincluden,	288, 289	Pitchstone flakes,	256, 263
— Panels, from Greenlaw, Kirkcudbright- shire,	290-2	Platt, Miss Margery I., M.Sc., Report on Animal Remains at the Broch of Skitten, Caithness,	143-5
— Door at Traquair House, formerly at Terregles House,	291	Port-Glasgow, Bells at,	171, 172
— Pulpit from Parton Church, Kirk- cudbrightshire,	292	Pots, ritual of placing in tombs,	22, 23, 33, 34
Oil Vessels, used at coronations,	240	— with lids,	44
— See Ampulla.		Pottery, from Cairnpapple Hill, West Lothian,	101-10, 123
Old Kilpatrick, Dunbartonshire, Bells at, .	186, 187	— from Hownam Rings,	212-20
Orkney, correspondences of pottery with Outer Hebrides,	26-8, 36	— from Scotstarvit Covert,	256, 262, 263
Orrock, Burntisland, Bronze Age Cairn burial at,	306-8	— from Skitten Broch, Caithness,	141, 142
Ouderogge, family of, Dutch bellfounders, 149-51, 167, 168, 171		— from "Wag" of Forse, Caithness, . . .	285
Paisley, Church Bells of,	148-51, 165-71	— Hebridean, correspondences with Orcadian,	25-8, 36
Palstave, Bronze,	321	Pounders,	141
		Pringle, Miss Julia L., M.B., Ch.B., elected, .	314
		Pumice Pendant, from Unival, North Uist, 23, 29, 30, 36	
		Purchase Fund, Special, report on,	313
		Purchases for Museum, 1947-48,	321, 322
		— for Library, 1947-48,	324, 325
		Purdue, Roger, bellfounder, Bristol, 149, 151, 157	

- | | PAGE | | PAGE |
|--|---------------|--|-------------------|
| Quaich, Pewter, | 321 | St Athernasc, Church of, Leuchars, | 299 |
| Querns, and Quern Stones, | 140, 318 | St Bonac, Chapel of, Leuchars, | 299 |
| — Rotary, | 215, 216, 217 | St Norman's market, Cromarty, | 301 |
| — Saddle, or lap-querns, | 280 and n. | St Vigean's, Hon. Lord, LL.D., deceased, | 310 |
| Raeburnfoot, Dumfriesshire, Roman road to, | 231-4 | Sampson, T. J., J.P., deceased, | 310 |
| Ramparts of Broch at Skitten, Caithness | 135-7 | Sanctuary, Neolithic, on Cairnpapple Hill, West Lothian, | 69, 112, 115, 118 |
| Rankin, Captain Sir Hugh C. R., Bart., elected, | 314 | Sayce, R. U., donation by, | 324 |
| — Lady, elected, | 314 | Scotstarvit Covert, Fife, excavation of so-called fort, | 241-63 |
| Ravenna geographer, his <i>Medio Nemeton</i> , | 118 | Scott, J. G., Note on Cinerary Urn from Milngavie, | 302, 303 |
| Redcastle, in Black Isle, Ross, | 60 | — Sir Lindsay, F.S.A., F.S.A.Scot., on The Chamber Tomb of Unival, North Uist, | 1-49 |
| Reid, J. Miller, bellfounder, Glasgow, | 167, 168 | Seal, Copper, donation of, | 321 |
| — R., in Ratho, donation by, | 318 | Shandon, Dunbartonshire, Bell at, | 192 |
| Renfrew, Bells at, | 172, 173 | Shaw, Mackenzie S., W.S., deceased, | 310 |
| Renfrewshire, Church Bells of, described, | 146-74 | Sheep, Early breeds of, | 230 |
| Renton, Dunbartonshire, Bells at, | 190 | Shetland, Objects from, | 318, 319 |
| Rhind Lectureship, report on, | 313 | Shoemaker's Measuring Rod, | 322 |
| Rhu (Row), Dunbartonshire, Bells at, | 190, 191 | Simpson, Major James Bridges, M.C., elected, | 315 |
| Rhynie, Parish of, Aberdeenshire, Bronze Axes found in, | 292, 293 | Simpson & Marwick, Messrs, W.S., donation by, | 321 |
| Richardson, James S., LL.D., F.S.A.Scot., donations by, | 320 | Skellat Bell, The, | 174, 184 |
| Rings, Bronze, from Orrock, Burntisland, | 308 | Skitten, Broch at, excavation of, | 124-45 |
| Ritual of chambered tomb burial, | 22-4, 32-5 | — radial compartments, | 130-3 |
| Robertson, Ian H. McK., M.A., elected, | 315 | — hearths, | 134, 135 |
| Rogers, Frederick R. S., elected, | 310 | — rampart, | 135-7 |
| Roman Fort at Cappuck, Relics from, | 311, 316 | — relics, | 138-45 |
| — influence on defensive sites in Southern Scotland, 195, 196, 200, 204, 205, 222, 223 | | Smith, Surgeon-Lieut. John B. G., elected, | 314 |
| — road to Raeburnfoot, Dumfriesshire | 231-4 | — Ronald M., elected, | 310 |
| Romanes, George, Edinburgh, donation by, | 294, 315 | Snaravoe, Shetland, Objects from, | 318 |
| Roofing of circular wooden structures, | 252-4, 271 | Snuff box, Tortoiseshell, with miniature of Prince Charles Edward Stuart, | 319 |
| Roseneath, Dunbartonshire, Bells at, | 175, 192 | — Mull, of glass, | 322 |
| Roslin, Midlothian, Neolithic pot from, | 294, 295 | Soroba, Cist at, | 59-60 |
| Ross, George, of Pitkerrie and Cromarty, | 62 | Spears and spear-heads, donation of, | 318, 320 |
| Rosslyn, Earl of, elected, | 315 | Specht, Johannes, bellfounder, Rotterdam, | 151, 165 |
| Ross-shire, Castles of Dunscaith and Redcastle, | 60, 61 | Spencer, Col. Charles Louis, C.B.E., D.S.O., deceased, | 310 |
| — Objects from, | 317, 318, 319 | Stalker, Rev. David M. G., M.A., B.D., elected, | 310 |
| Rotterdam, bellfounders at, | 149, 150 | Steer, Dr Kenneth A., donation by, | 318 |
| Roxburghshire, Objects from, | 315, 316, 318 | Steven & Struthers, Messrs, bellfounders, Glasgow, | 152 |
| Royal Society of Edinburgh, Medal of, presented, | 320 | Stevenson, Robert B. K., M.A., on Charles I's Coronation Ampulla, | 237-41 |
| Royan, Rev. J. W., elected, | 310 | — Notes on Mourning Neckslides, | 289, 290 |
| Rudha na Traighe, Argyll, Fort of, | 58 | — Some Prehistoric Objects, | 292-5 |
| Rudh' an Dunain, Skye, Chambered Tomb, | 30, 31 | — Beaker from Fettercairn, | 295 |
| Russell, Sir David, LL.D., donation by, | 323 | — Short Cist at Knockhill, Angus, | 295, 296 |
| Rutherford, Ian Charles, W.S., elected, | 314 | — donations by, | 318, 323 |
| Sacrificial rites, | 283 | Stewart, James C., Edinburgh, donation by, | 316 |
| Saddle Querns, miniature, | 280 | | |
| Saint, Reginald, elected, | 315 | | |

	PAGE		PAGE
Stone Circle, on Cairnpapple Hill, West Lothian,	83-92	Uist, North: Chamber tomb of Unival, . . .	1-49
— holes, analysis of, at Cairnpapple Hill, West Lothian,	84	— South, Objects from,	318
— objects, presented,	318	Unival, Chamber Tomb of:	1-49
— robbing, instances of,	75, 111, 116	— Iron Age house,	2-7
Stones, Charm, presented,	319	— Structure of tomb,	7-11, 30-2
Sulley, Edmund John, elected,	310	— Deposits,	11-3
Sundial, from Woodhouselee, gift of,	319	— Burials,	13-5
Sutherland, William, Uyeasound, donation by,	318	— Pottery,	15-28
Suttie, Sir George Grant, his trustee consents to Museum's purchase of gold ampulla,	238	— Other finds,	29, 30
— family of, in possession of gold ampulla for anointing Charles I,	237-8	— Ritual of burial,	22-4, 32-5
Sutton Hoo, textiles from,	227 n.	— Dating,	35, 36, 38-47
Sword, Back, with basket hilt,	322	— Human remains,	37
— Bronze,	317	Unstan Bowl, from Unival, North Uist,	25 and n., 36
Sykes, Edward F., deceased,	310	Urns, Cinerary, at Cairnpapple,	108-10
		— at Milngavie,	302, 303
Tartan Cloth, found at Falkirk,	227-30	— presented,	315
Taylor, Alexander, Edinburgh, donation by,	318	Urquhart, Sheriff Adam, costumes belonging to,	320
Taylor & Co., Messrs John, bellfounders, 149, 152, 168, 177, 185, 186		— Major Bruce, of Craigston,	64
Temple, Early Bronze Age, at Cairnpapple Hill, West Lothian,	70	— Miss Florence, Edinburgh, donations by,	312, 320
Terregles Church, Panels and Choir Stalls from,	288, 289	— Sir John, of Cromarty,	62, 68
— House, Oak Door from,	291	— Sir Thomas, of Cromarty,	63-7
Tether-stones,	139	— Sir William, of Cromarty,	62, 64
Textiles, in National Museum, Edinburgh,	225-31	— William, of Meldrum,	62
Thomason, Thomas, Eshaness, Shetland, donation by,	319	Urquharts, The, Sheriffs of Cromarty,	62-8
Thoms, David Boath, M.A., elected,	314	Waffle Iron, presented,	321
Thomson, James Cornwallis, C.A., deceased,	310	"Wag" of Forse, Caithness, further excavations,	275-85
Thorburn, Philip, B.A., elected,	310	Waghevens, family of, Flemish bellfounders,	140
Threave Castle, Bed Panels supposed from,	290	Wainwright, Frederick T., B.A., Ph.D., elected,	310
Tokens, farthing, half-penny and penny, collection of,	322	Warden, I. G. H., West Linton, donation by,	317
Tombs, Chambered: see Barpa Langass; Cleittraval; Rudh' an Dunain; Unival.		Warner & Sons, John, bellfounders, London,	180, 190, 192
Torcs, formation of,	293-4	War Office, donation by,	312, 319
— from Kelton, Dumfriesshire,	293-4	Watcarrick Dunning, Dumfriesshire,	232
— from Lamberton Moor,	294	Watson, Miss Elspeth J. Boog, M.A., elected,	310
— from Hyndford Crannog,	294	— William J., M.A., LL.D., D.Litt.Celt., deceased,	310
Trade-routes, prehistoric,	39-47	Weaving, methods of,	226-30
Train, Joseph, antiquary, items from his collection purchased,	290, 293, 312, 321	Wemyss Bay, Bells at,	173, 174
Treasure trove, gifts of,	318	Wessex Culture, Chronology of,	38-47
Truckell, Alfred Edgar, elected,	310	West Lothian, Objects from,	318
Tuyère, Clay, from Arnbathie, Perthshire,	317	White, Campbell, donation by,	323
		Whitechapel Bell Foundry, London, 151, 154, 161, 164, 165, 167, 172, 177, 178	
		Whithorn, Objects from,	319
		Whitton, Douglas, elected,	310
		Wigtownshire, Objects from,	316, 319
		Williams, H. Mallam, J.P., deceased,	310

INDEX.

	PAGE		PAGE
Wilson, John C., & Co., bellfounders, Glasgow, 152, 153, 155, 156, 161, 162, 164, 173, 177, 178, 180, 181, 182, 186, 189, 191		Works, Ministry of, and Cairnpapple Hill site,	74, 75
Wishart, Frederick, deceased,	310	Wright, Frederic Victor, elected,	316
Wood, Carbonised, from Hownam Rings,	224		
— Circular structures of, 246 <i>et seq.</i> , 267-73		Young, Mrs Alison, F.S.A.Scot., reports on Cup-marked Stones near Aberfeldy, 304-6	
— Panel, Painted, from Lincluden, 288, 289		— Rev. John McCallum, M.A., B.D., elected,	314
Wool fragments, examination of, in relation to breed of sheep,	230		



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